Value-added Initiatives: Distributional impacts on the global value chain for Colombia's coffee

Thesis submitted for the degree of Doctor of Philosophy

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DECLARATION

I hereby declare that this thesis has not been submitted, either in the same or different form, to this or any other university for any degree.

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VALUE-ADDED INITIATIVES: DISTRIBUTIONAL IMPACTS ON THE GLOBAL VALUE CHAIN FOR COLOMBIA'S COFFEE

SUMMARY

This thesis discusses whether participation in two voluntary sustainability standards (VSS) has improved the capacity of coffee producers to upgrade, and the extent to which it has brought economic benefits and reduced their exposure to risk and vulnerability. These debates are addressed using the Global Value Chain (GVC) perspective, including recent contributions that integrate poverty considerations, to assess the implications for coffee growers of participating in the specialty coffee value chain. In this analysis, particular emphasis is given to differences according to farm size.

The study focuses on the Nespresso AAA Sustainable Quality™ programme and Fairtrade certification in Colombia, comparing the two treatment groups with a control sample of similar conventional producers. In addition to this, a comparison between two groups of AAA producers was carried out. The data comes from three rounds of surveys and two periods of field work. To assess differences over time and construct a robust counterfactual this thesis combines Propensity Score Matching (PSM) with the difference-in-difference (DID) analytic approach.

VSS initiatives have been promoted as a way of improving the livelihoods of small producers, with extensive implementation in coffee production. The analysis shows that interventions to facilitate upgrading and support the involvement of producers in VSS do not produce consistent improvements over time for most of the indicators analysed. Therefore, the potential of VSS to generate significant improvements in livelihoods for certified producers, could take both a longer time and require greater institutional efforts to build capacities. This finding needs to be considered in light of strong institutional support for all coffee producers in Colombia, which could offset the impact of VSS support.

In terms of livelihood-related variables, the analysis shows that participating producers became more dependent on coffee revenues (as there was no significant expansion of cash production), reduced their share of haired labour during the period of study and paid these workers less than the minimum wage. These trends are similar to those of the conventional producers, since the analysis did not find significant differences over time.

The outcomes of the analysis by farm size draws a bleak picture for smallholders below one hectare. The main conclusion that can be drawn from the evidence is that the farm size constrained both the potential upgrading opportunities from VSS and their chances of gaining sustainable incomes. The political economy effects of these disappointing results, both for certified producers and producers thinking about certification, must be analysed carefully, as growers' expectations of improving their economic and social viability through the adoption VSS are lower than expected. As such, VSS initiatives cannot be the only strategy for helping very small coffee producers to overcome the structural restrictions and limitations they have faced for decades.

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LIST OF ACRONYMS

ALMACAFE	Almacenes del Café
AO	Appellations of origin
ATOs	Alternative Trade Organisations
BLS U.S.	Bureau of Labour Statistics, the United States
COSA	Committee on Sustainable Assessment
CRECE	Centre for Regional Entrepreneurial and Coffee Studies
CLAC	The Latin American and Caribbean Network of Small Fair Trade Producers
CSR	Corporate Social Responsibility
EU	European Union
FLO	Fairtrade Labelling Organization
FNC	National Federation of Coffee Growers
FoNC	National Coffee Found
GAP	Good Agricultural Practices
GI	Geographical indications
ICO	International Coffee Organisation
MNCs	Multinational Corporations
NGO	Non-governmental Organisations
SMEs	Small and Medium Enterprises
TPC	Third party certification bodies
PSM	Propensity Score Matching
VSS	Voluntary Sustainability Standards
PPP	Public Private Partnership
R&D	Research and Development
UE	United States

CHAPTER ONE
Introduction

Colombia, the world's third largest coffee exporting country, became the first coffee exporter to embark on an active strategy of differentiating and marketing its product in the coffee world (Giovannucci, Leibovich et al. 2002, Reina, Silva et al. 2007, WIPO 2007, Hughes 2009, Juglar 2009, The Economist 2010). Since 1960 Colombia's unified marketing campaign and brand development of coffee was conducted through a differentiation strategy, in which the "100 % Colombian coffee" programme was the basic strategy, and the Juan Valdez® character[1] as the image to promote Colombian coffee as the best in the world. This strategy, perhaps the most successful campaign for a product from a developing country to promote the authenticity of origin (Deshpande 2001), resulted in higher prices for Colombian coffee compared to other coffees of similar quality during four decades. However, the success of this strategy has diminished since 1989 with the collapse of the economic clauses of the International Coffee Agreement (ICA), which regulated export quantities and meant that higher revenues for coffee producers could only be obtained through higher green coffee prices.

As with other agribusiness industries following the break-up of regulation through international commodity agreements, during the last two decades the coffee industry has experienced structural changes which have had negative distributional impacts affecting producer's long term real returns (Lewin, Giovannucci et al. 2004, Ataman and Beghin 2005, Baffes, Lewin et al. 2005, Daviron and Ponte 2005). Along with a greater policy emphasis on the role of markets and the private sector in agriculture (Potts 2007, World Bank 2007) there has been a significant process of concentration and accelerated vertical coordination along the coffee value chain (Pizano 2001, Ponte 2004). Under this complex business environment, coffee producers have viewed product differentiation and adding value to their products and processes as the potential tool for supporting rural development (Humphrey 2008). These strategies based upon claims of quality, environmental impact, origin and community development among others, are part of a broader trend towards the increasing importance of credence[2] goods in the food

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[1] Café de Colombia The triangular symbol of "Cafe de Colombia" represents the archetypal Colombian coffee grower. Juan Valdez and his faithful mule represent the characteristics of the humble farmer in the Andes mountains where Colombian coffee is grown (Reina et al. 2007).

[2] As will be explained below, Jaffee et al. (2011) pointed out that credence characteristics are attributes predominantly associated with how products are produced (process characteristics), which are not verifiable through inspection or consumption. They require verifiable information accompanying the product on which attributes is or is not present.

industry (Reardon, Codron et al. 2001, Anholt 2003, Dolan and Humphrey 2004, Humphrey 2005, Ponte and Gibbon 2005, Humphrey 2006a, Potts 2007).

The coffee sector is one of the most important agrifood industries, both in terms of the number and frequency use of such claims, with between one and two million farms participating in different programmes in nearly 30 countries around the world (Muradian and Pelupessy 2005, Giovannucci, Liu et al. 2008, Pierrot, Giovannucci et al. 2011). In particular, those based on third party inspection and certification of suppliers through environmental and socio-economic standards (Voluntary Sustainability Standards – VSS hereafter), those linked to authenticity of origin (geographical indication), and more recently those authored by mayor branded coffee companies and retailers (Daviron and Ponte 2005, Giovannucci, Liu et al. 2008, Giovannucci, Josling et al. 2009, OXFAM 2009, Alvarez and Von Hagen 2011, Pierrot, Giovannucci et al. 2011, Von Hagen and Alvarez 2011, Giovannucci, Scherr et al. 2012, Panhuysen and VanReenen 2012, Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012). These different strategies for adding value and differentiating coffee products can be initiated by different actors in the value chain: (i) by producers' linked to authenticity of origin or relating to the social and environmental impact; (ii) by trading partnerships between Alternative Trade Organizations or NGOs; and (iii) corporate and industrial firm initiatives.

Until now, there has been little agreement on the question of whether the multiplication of private standards, certifications and labels, including the indirect costs associated with their adoption, facilitates or hinders farmer participation in agri-food value chains and end markets (Ponte and Ewert 2009, Ponte, Kelling et al. 2014). Likewise, there is no consensus on whether this trend is harming producers and local communities (Ponte and Gibbon 2005), or whether it has opened new opportunities for small farmers to increase their incomes, helped them fulfil their basic needs and improved their welfare and livelihood (Alvarez and Von Hagen 2011, Von Hagen and Alvarez 2011, Potts, Lynch et al. 2014).

With the coffee sector case in particular, several researchers agree that there is an increasing demand for effective impact evaluation on the outcomes and possibilities for these initiatives (Lewin, Giovannucci et al. 2004, Muradian and Pelupessy 2005, Potts 2007, Teuber 2007, Linton 2008, Neilson 2008, Raynolds 2009, Beuchelt and Zeller 2011, Von Hagen and Alvarez 2011). Despite an extensive literature review on the impact of VSS (most of them on the Fairtrade certification) that suggests that producers have received both direct and indirect benefits from adopting VSS, a growing body of researchers argues that a common limitation in these studies is the absence of long-term impact assessments using statistically valid data. Without this type of analysis, it is

not possible to accurately determine if participation in different forms of GVC governance [throughout the adoption of different kind of certification standards] has progressively improved the producers' ability to innovate in different spheres of economic upgrading to increase their incomes and improve the livelihood and well-being of coffee growers as a result (Von Hagen and Alvarez 2011).

The relative merits of each differentiating strategy, and whether or not they generate sustainable incomes for coffee producers, has not been systematically analysed. While the general merits of differentiation have been examined, and the impacts of some of these initiatives have been studied in isolation, there is no evidence of a systematic comparison of the different approaches to differentiation. Notwithstanding, from the literature review, some concerns arise on each type of strategy:

- There has been extensive debate on consolidation in global coffee value chains and the increasing dominance of coffee companies based in developed countries. Differentiation along the lines of Nespresso AAA Sustainable Quality Program, the sustainable division from Nestlé, raises such concerns. As a competitive strategy to participate in the new segments of the market, lead firms have created their own private standards and certifications in terms of sustainability. In this sense, there is concern on the profitability of these initiatives for the upstream value chain participants, in particular for small producers (Daviron and Ponte 2005, Giovannucci and Potts 2008, Neilson 2008, Raynolds 2009, Potts, Van der Meer et al. 2010).
- The growth of Fairtrade coffee sales has increased revenues for some coffee farmers. Nevertheless, doubts remain on the extent that small producers actually benefit. In particular, various analysts have suggested that they only manage to sell a limited proportion of their production as Fairtrade, thus reducing the impact of benefits (Ponte and Kawuma 2003, Potts, Van der Meer et al. 2010, Lebel 2012).
- With the development of the "100 % Colombian coffee" programme, regional coffees and later geographical indications of origin could put more power into the hands of producers, and in Colombia the National Federation of Coffee Growers (FNC) is particularly experienced in developing the Colombia brand and marketing coffee. Nevertheless, developing global or national brands is particularly challenging and expensive. It remains to be seen whether or not the introduction of a new market-oriented strategy generates increased revenues for farmers (Giovannucci, Josling et al. 2009, Giovannucci and Samper 2009, Hughes 2009, Juglar 2009, Lozano, Samper et al. 2012).

In the case of all three types of differentiation, two further concerns remain. First, that compliance with VSS requires considerable financial, informational, technical, managerial skills, and network resources – such as improved farming practices, greater concern with quality, investments in equipment, the costs of certification, etc., that tend cost small farmers more than their larger counterparts with economies of scale. Second, little is known about the security of farmers incorporated into such schemes. How dependent do small producers become on the performance of these differentiated coffee value chains and the strategies of the lead firms and key actors in these chains?

This thesis addresses these issues through a comparison of three rounds of survey data of the production and trade of conventional coffee which is destined for external market labelled as "100 % Colombian coffee" programme or being part of the strategy of regional coffees and geographical indications with two different Voluntary Sustainability Standards (VSS) – Fairtrade and Nespresso AAA. The advantages and disadvantages of these schemes for producers will be examined through a case study of Colombia's value chain structures and institutions. Global value chain analysis will be used to study the most important changes between the coffee producers and buyer relationships across two producing regions in Colombia and to explain what kind of changes have taken place and the effects on producers and their organizations.

In consequence, the main focus of this study is to evaluate how participation in the specialty coffee value chain by Colombian coffee producers have facilitated their upgrading strategies, and the extent to which have resulted in economic benefits and reduced exposure to risk and vulnerability for them.

This line of inquiry leads to the formulation of two key questions: First, how has the participation in distinct types of differentiated channels, such as private standards, certification schemes, and labels etc., affected the upgrading strategies of coffee producers in the specialty coffee value chain? Secondly**,** how have these new value added initiatives affected the pattern of revenues for producers, and their exposure to risk and vulnerability in the specialty coffee value chain?

The first question focuses on understanding if the dynamics of participation in the specialty coffee value chain, has facilitated farmers' upgrading strategies, small and medium sized coffee producers in particular. Adopting the stricter requirements of voluntary sustainability standards (VSS) entails implement significant upgrading strategies. However, upgrading in the coffee sector demand to overcome serious constraints that limited farmers' ability to participate competitively (Bamber and Fernández-Stark 2014), but particularly require institutions to help producers to develop competences for further upgrading (Humphrey 2008, Riisgaard, Bolwig et al. 2010).

The second question focuses, not only on the issue of farm level returns, but also on the analysis of livelihoods risk to which farmers are exposed. In other words, whether the farmers participating in specialty coffee value chains, not only benefit from increased income and profitability, and a higher share of the revenues from the value chains in which they participate, but also improved farmer livelihoods. Even if incomes increase, the security and reliability of these incomes has an impact on overall welfare, for example, not only cash income or greater income stability, but also broader societal and environmental benefits (Riisgaard, Bolwig et al. 2010). As these questions are addressed, special attention is paid to the differences between big and small coffee growers.

This study used quantitative data from three rounds of surveys during a four year interval, employed impact analysis methods, and qualitative data from two periods of fieldwork in Colombia. This study's aims to contribute to the debate on the impact of the adoption of VSS on the upgrading strategies of coffee growers, with particular emphasis on the role that institutions can play to help producers overcome serious constrains that limit their ability to develop competences for further upgrading and participate competitively in developing countries. In addition, this thesis seeks to contribute to current research exploring to what extent VSS fulfil their original purpose of improving farmer's livelihoods.

1.1. Main theoretical issues

This thesis will address these debates using the Global Value Chain (GVC) perspective, including recent contributions in which vertical and horizontal dimensions of GVC analysis are integrated to assess the implications for coffee growers of participating in the Colombian specialty coffee value chain (Bolwig, Gibbon et al. 2009, Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010). Particularly notable in the agri-food sector, the GVC methodology has been used in a variety of studies to examine how global buyers and different patterns of value chain governance [throughout the adoption of different kind of certification standards] affect the scope of farmers' upgrading strategies in developing countries (Humphrey and Schmitz 2002a, Humphrey 2006a, Humphrey 2006b, Lee, Gereffi et al. 2012, Bamber and Fernández-Stark 2014, Ponte, Kelling et al. 2014).

This study will use empirical material from the global value chain for certified Fairtrade coffee, and the Nespresso AAA Sustainable Quality^{TM} Programme in Colombia, to reflect upon the prospects for value adding strategies in the global coffee industry, and the extent to which these strategies actually increase the incomes of coffee producers and redistribute incomes along the coffee value chain.

Not without its critics, GVC analysis has “been polemical rather than scholar” (Gilbert 2008). Nonetheless, it has contributed to a more systematic understanding of the political economy of contemporary global production systems (Gereffi, Humphrey et al. 2001, Humphrey 2005, Petkova 2006, Humphrey 2006a, Humphrey 2006b, Neilson 2008, Ponte 2008, Bair 2009, Von Hagen and Alvarez 2011) As a result, during the last decade, the GVC approach has expanded considerably, both empirically and conceptually, and its key elements have been extensively discussed. There is not only an emergent literature analysing the links between value chains, and standards and ethical/sustainable trade issues in general and the coffee sector in particular (Talbot 1997, Ponte 2004, Daviron and Ponte 2005, Petkova 2006, Neilson 2007, Raynolds, Murray et al. 2007, Bitzer, Francken et al. 2008, Neilson 2008, Raynolds 2009, Riisgaard, Bolwig et al. 2010), but also new commodity policies that are being supported by a burgeoning literature arising from the value chain perspective (Ronchi 2006, ECLAC 2008, Sexsmith and Potts 2009, Von Hagen and Alvarez 2011).

The fieldwork used in this study took place in Colombia during two phases, between October 2009 and December 2010; and between August 2012 and April 2013. To test the research questions, primary data was gathered through three different surveys to collect information on Fairtrade and Nespresso AAA producers for the harvest years of 2008, 2009 and 2011. In-depth interviews and focus groups interviews with key stakeholders of the coffee chain in Colombia were also carried out. This thesis combines impact evaluation techniques to construct statistical comparison groups. Propensity Score Matching (PSM) was implemented in combination with Difference in Difference approach (DID). This allowed for control of selection bias and the influence of independent factors.

1.2. Structure of the thesis

Chapter 2 discusses the main theoretical issues that this thesis will adopt to study recent developments in the coffee market and its implications for the competitiveness of small farmers, in particular. The chapter uses the GVC perspective to study current developments in the coffee market, their impact on the competitiveness of coffee growers and on a set of specific livelihood-related variables. The chapter explores the concepts of governance and upgrading, as well as recent developments in the global value chain analysis, that integrate poverty considerations into this framework. The chapter also describes current trends in agri-food value chains, highlighting the increasing importance of product differentiation based on credence and the increased proliferation of private standards, labels and certifications systems, both in private and public spheres characteristics. This chapter describes recent trends in agri-food standards and how these initiatives have affected upgrading opportunities for

agricultural producers, and have contributed to improve farmer livelihoods in developing countries. Finally, the chapter looks at the importance of mobilizing resources to support producers' upgrading strategies to participate in agri-food value chains.

Chapter 3 describes the methods used, with an initial restatement of the research questions and the rationale behind the selection of the case study. The chapter then discusses the main features of the research methods used to test the two key questions mentioned above. It also discusses how this thesis operationalised the key questions examined in this study. The methodological perspective chosen is presented. It goes on to explain the different methodologies designed for data gathering that include data surveys through structured household questionnaires and the procedures for the creation of valid comparison groups. In doing so, this thesis combines impact evaluation techniques as the Propensity Score Matching (PSM) in combination with Difference in Difference approach (DID). This allowed to control selection bias and the influence of independent factors. The chapter also details the interviews that targeted various types of respondents during the two phases of fieldwork carried out in Colombia: coffee growers, local buyers at cooperative level, exporters, support and donor organisations, and extension personnel.

Chapter 4 discusses the most important changes in the coffee industry during the last thirty years. The chapter describes how new forms of governance in the global value chain for coffee emerged. First, it discusses how most producing countries have experienced a deregulation process, added to a substantial increase in production and high volatility of nominal prices. Second, it describes how the governance of international coffee trade has moved to corporate strategies adopted by large international traders, roasters and retailers (Pizano 2001, Fitter and Kaplinsky 2001a, Kaplinsky and Fitter 2004, Ponte 2004, Reina, Silva et al. 2007).

The chapter then highlights the higher demand at consumer level for differentiated and higher-value coffee products, which has occurred during the last decade. It shows that this segment of the market, at the top level of the quality pyramid, is led by an intense search for high quality coffee, careful evaluation of coffee attributes, and the development of close business relationships between producers and buyers, in particular, towards codes of conduct for social and environmental impact (Humphrey 2005). Then, from the supplier perspective, the chapter explains how, a growing group of producers are pursuing strategies that are independent from commodity pricing at the exchanges, in order to capture more of the downstream margins in the coffee chain and increase returns by earning premiums. These strategies include certified and speciality coffee for at least a portion of their production. Finally, the chapter describes

the market evolution, the main features of sustainable coffee certifications and verifications. Finally, this chapter raises concerns about current trends of oversupply in specialty and VSS coffees in this market, as this could affect the upgrading opportunities of coffee growers.

Chapter 5 presents the most important changes in the Colombian coffee industry, particularly, during the last two decades. It starts by providing a description of the local context and main macro trends of the sector, then discusses how Colombia's coffee institutions operate and its regulatory framework, as well as the structure and trends in domestic and external marketing. In particular, the chapter discusses the new market-oriented strategy of value-added launched by Colombian coffee institutions at the beginning of the century. At this stage, the chapter emphasises the recent evolution of the trade of sustainable and speciality coffee in Colombia. As such, it presents a complete picture of this segment of the market. In particular, the chapter raised issues dealing with oversupply in the speciality and sustainable coffee segment, erosion in the price premiums for certification paid to coffee growers, and changes in the internal market at the expense of the share held by the initiatives created by the coffee growers and the benefits of those created by the corporate sector.

Chapter 6 addresses the first research question on how participation in two distinct Voluntary Sustainability Standards (VSS), such as Fairtrade and Nespresso AAA compared to similar producers, affected the upgrading strategies of coffee producers in the specialty coffee value chain. This chapter contributes to the debate on the impact of the adoption of VSS on the upgrading strategies of coffee growers, particularly small farmers, in a four-year period. In addition, it explores whether coffee growers, who adopted voluntary standards, were more likely to receive institutional support to help them overcome their most important limitations to further upgrading. This thesis proposes a model with two development areas that are determinant for producers to build their competences and upgrade: (i) Institutional arrangements to facilitate upgrading; and ii) investments and adoption of good agricultural practices to improve upgrading trajectories. This approach allows us to better understand whether the affiliation of coffee producers to VSS, compared with their respective control group of producers, have resulted in significant differences in differences for a set of matched indicators which shed light on farmers' capacity to innovate in different spheres of economic upgrading in the markets governed by private standards.

Chapter 7 focuses on the question of whether the adoption of specific upgrading strategies, depicted in Chapter 6, has achieved its purpose of improving socio-economic conditions for producers. This Chapter, quantitatively assesses whether farmers benefit, not only in terms of increased cash incomes and profitability, or the distribution of

wealth towards a higher share of the revenues in the value chain, but also in terms of the evolution of important livelihood-related variables. As these concerns are addressed, special attention is paid to the differences between larger and smaller coffee growers.

The Chapter 8 presents the discussion and conclusions related to the new empirical evidence presented in the chapters 6 and 7 to understand how the compliance with the competitive requirements of two VSS (Fairtrade and Nespresso AAA Sustainable Quality programme) impacted on the upgrading opportunities of coffee growers, and achieved its original purpose of improving the welfare and livelihoods of producers, smallholders in particular. This chapter identifies opportunities for future research, and for policies aimed at supporting economic upgrading in developing countries.

CHAPTER TWO
Prospects for economic upgrading in agri-food value chains: background for the analysis of specialty coffee value chains

2.1 Introduction

There is a renewed interest in the potential contribution on economic development of the various differentiation strategies recently employed by agricultural and livestock producers in developing countries. In many countries, producers, supported by a synergy between public and private initiatives, have sought to differentiate and add value to their products and processes, in order to improve their access to global agri-food chains, positioning themselves "outside the commodity box" (Lewin, Giovannucci et al. 2004), supporting rural development (Humphrey 2008) and promoting social or political economy objectives (Menaplace, Gregory et al. 2009).

Although there is no single driver of this trend, these strategies towards differentiation are affected by two major developments: a broader shift towards the increasing importance of credence[3] goods in the food industry (Reardon, Codron et al. 2001, Gereffi, Humphrey et al. 2005, Ponte and Gibbon 2005) and the dramatic transformation in the agricultural private standards landscape, both nationally and internationally, and also within specific global agri-food chains (Ponte 2004, Henson and Reardon 2005, Ponte and Gibbon 2005, Henson and Jaffee 2006, Henson and Humphrey 2012). These trends have been particularly evident in the coffee industry and will be further discussed in this dissertation.

Product differentiation, through credence claims and private standards, have emerged as an important element of governance to coordinate supplier activities (Kaplinsky 2004, Ponte and Gibbon 2005) that has significant implications for the capacity of producers to innovate in different spheres of economic upgrading (Giuliani, Pietrobelli et al. 2005, Neilson 2007, Kaplinsky and Morris 2008, Riisgaard, Bolwig et al. 2010). As such, differentiation can have profound repercussions on the livelihoods of farmers located in developing countries, particularly smaller and vulnerable producers, who depend almost exclusively on the production and sale of agri-food crops (Ponte and Ewert 2009, Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010, Ruben 2014). However, there is little agreement on the question of how the proliferation of standards and credence claims has affected the upgrading strategies of agricultural producers in developing

[3] As will be explained below, Jaffee et al. (2011) pointed out that credence characteristics are attributes predominantly associated with how products are produced (process characteristics), which are not verifiable through inspection or consumption. They require that verifiable information accompanies the product on which of these attributes is or is not present.

countries. Nor is agreement on the socio-economic benefits to farmers that arise from the introduction of different types of standards and the product differentiation they create.

There is still debate on whether the multiplication of private standards, certifications and labels, including the indirect costs associated with their adoption, is facilitating or hindering farmer participation in agri-food value chains and end markets (Ponte and Ewert 2009, Ponte, Kelling et al. 2014). Likewise, there is no consensus on whether this trend is harming producers and local communities (Ponte and Gibbon 2005), or if it has opened new opportunities for small farmers to increase their incomes, helped them fulfil their basic needs and improved their welfare and livelihood (Alvarez and Von Hagen 2011, Von Hagen and Alvarez 2011, Potts, Lynch et al. 2014).

This thesis will address these debates using the Global Value Chain (GVC) perspective. As a result, this chapter explores the concepts of governance and upgrading, as well as recent contributions in which the vertical and horizontal dimensions of value chain analysis are integrated as a framework to assess the implications for coffee growers of participating in the specialty coffee value chain in Colombia (Bolwig, Gibbon et al. 2009, Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010). Particularly notable in the agri-food sector, the GVC methodology has been used in a variety of studies to examine how global buyers and different patterns of value chain governance [throughout the adoption of different kinds of certification standards] affect the scope of farmers' upgrading strategies in developing countries (Humphrey and Schmitz 2002a, Humphrey 2006a, Humphrey 2006b, Lee, Gereffi et al. 2012, Bamber and Fernández-Stark 2014, Ponte, Kelling et al. 2014).

However, a general limitation of these studies is the absence of long-term impact assessments using statistically valid data to address if participation in different forms of GVC governance in agri-food value chains have progressively contributed to the ability of producers to innovate in different spheres of economic upgrading to increase their incomes and improve the livelihood and well-being of coffee growers as a result (Von Hagen and Alvarez 2011). Most of the available knowledge today lacks of a convincing methodology and research designs, that makes difficult to attribute outcomes directly to the adoption of the competitive requirements of standards and certifications systems (Giovannucci and Potts 2008, Alvarez and Von Hagen 2011, Von Hagen and Alvarez 2011, Giovannucci, Scherr et al. 2012).

This chapter is structured both to provide a review of the relevant literature on GVC analysis and recent trends in product differentiation as well as to explain how credence claims and the increased proliferation of VSS not only have affected the upgrading

opportunities for agricultural producers, but also how if these initiatives have contributed to transform farmer livelihoods in developing countries. Thus, the two key questions that will be addressed in this chapter are:

- How has the participation in distinct types of differentiated channels, such as private standards, certification schemes, and labels etc., affected the upgrading strategies of coffee producers in the specialty coffee value chain?
- How have these new value added initiatives affected the pattern of revenues for producers, and their exposure to risk and vulnerability in the specialty coffee value chain?

The first question focuses on understanding if the dynamics of participation in the specialty coffee value chain, has facilitated farmers' upgrading strategies, small and medium sized coffee producers in particular. Adopting the stricter requirements of Voluntary Sustainability Standards (VSS) entails implement significant upgrading strategies. However, upgrading in the coffee sector demands to overcome serious constraints that limited farmers´ ability to participate competitively (Bamber and Fernández-Stark 2014), but particularly requires institutions to help producers to develop competences for further upgrading (Humphrey 2008, Riisgaard, Bolwig et al. 2010).

The second question focuses, not only on the issue of farm level returns, but also on the analysis of livelihoods risk to which farmers are exposed. In other words, whether the farmers participating in specialty coffee value chains, not only benefit from increased income and profitability, and a higher share of the revenues from the value chains in which they participate, but also improved farmer livelihoods. Even if incomes increase, the security and reliability of these incomes has an impact on the overall welfare, for example, not only cash income or greater income stability, but also broader societal and environmental benefits (Riisgaard, Bolwig et al. 2010). As these questions are addressed, special attention is paid to the differences between large and small coffee growers.

This chapter is structured into six sections. After this introduction, the second section introduces the recent developments in the global value chain analysis, including the concepts of governance and upgrading. Section Three describes the recent trends in agri-food value chains. The fourth section reviews the literature exploring current debates on private standards. The fifth section looks at the importance of mobilizing resources in supporting producers upgrading strategies to participate in agri-food value chains, followed by the main conclusions presented in section six.

2.2 Global value chain analysis applied to the agri-food sector

This thesis will adopt a Global Value Chain (GVC) analysis to study recent developments in the coffee market in Colombia and their implications for the competitiveness of coffee growers and for a set of specific livelihood-related variables. An important body of literature on GVC analysis has emerged in the last fifteen years, and its key elements have been treated extensively. The theoretical focus of the analysis of GVCs, which provides an analytical framework for the examination of the interrelations between actors in value chains, was initially formulated by Gereffi and Korzeniewicz (1994), building on previous work by Wallerstein on global commodity chains (Sturgeon 2009), and developed further in different directions by Gereffi et al. (2005) and by Gibbon and Ponte (2005).

The GVC approach focuses on how value is created and captured in global value chains (Gereffi and Korzeniewicz 1994). It looks closely at the vertical coordination of different enterprises along the value chain of activities involved from conception through, production, processing, delivery and final disposal after use (Gereffi, Humphrey et al. 2001, Kaplinsky and Morris 2001, Humphrey 2005).

GVC analysis is increasingly acknowledged as a valuable analytical tool for policy development analysis (Kaplinsky and Morris 2001, Kaplinsky and Morris 2008, Kaplinsky 2010). In this regard, GVC Analysis has been used in a variety of case studies in sectors such as manufacturing, footwear, high technology and agro-food commodities,[4] and its outcomes have been instrumental to a more systematic comprehension of the political economy of contemporary agri-food value chains (Gereffi, Humphrey et al. 2001, Humphrey 2005, Petkova 2006, Humphrey 2006a, Humphrey 2006b, Neilson 2008, Ponte 2008, Bair 2009, Von Hagen and Alvarez 2011).

Value chain analysis has contributed to the understanding of the obstacles faced by those who seek to transform their organizational structure in order to participate in global value chains (Schmitz, 2005). Given that GVC analysis explicitly addresses the question of power inequalities (Humphrey, 2005), development and inequality (Petkova, 2006), it enables a comprehension of how enterprises in developing countries, such as farms, are integrated into global markets (Ponte and Gibbon, 2005; Ponte, 2008), and recognises the obstacles and opportunities that arise when they try to move up the value chain (Gereffi et al., 2005).[5]

[4] Such as fruit (fresh and processed), horticulture, bananas, coffee and cocoa, among others.
[5] This is an area of research where the analysis can be developed further, as this dissertation aims to do.

The following section expands on the current debates on the relationship between the typologies of GVC governance and the possibilities for successful economic upgrading, which serve as the basis for the fundamental questions that this dissertation addresses on the specialty coffee value chains. In the last section of this Chapter, the role that institutions play in facilitating upgrading is highlighted.

2.2.1 Governance and upgrading

According to Fernandez-Stark et al. (2014) and Sturgeon (2009), who build on previous developments from Gereffi, GVC analysis has a fourfold framework: an input-output structure, geographic coverage, a governance structure and a local institutional context. The first two elements of the GVC framework are mainly descriptive and the last two are causal (Sturgeon 2009).

- The input-output structure describes the sequence of value added activities to transform raw materials in a set of products and services
- Territoriality identifies the geographical distribution of the chain
- The form of governance structure explains how access to upgrading is controlled in the value chain
- Local institutions play a role in supporting and shaping value chains in the countries in which they are located.

With differences in the streams of theory building, research, terminology and emphasis going on under the GVC (Bair 2009, Sturgeon 2009) in the last fifteen years, research on GVC analysis has grown and diversified considerably, both empirically and conceptually, and its key elements have been discussed at length (see, among others, Ponte 2004, Ponte and Gibbon 2005, Gibbon, Bair et al. 2008, Ponte 2008, Bair 2009). From these four dimensions, governance and the links between economic and social upgrading have received the most attention as the centrepiece of GVC analysis (Sturgeon 2009, Gereffi 2014, Ponte, Kelling et al. 2014). Meanwhile the consideration of the institutional context (both seen from the perspective of domestic regulation and public sector), initially absent in the original work from Gereffi (1994), has been incorporated to the analysis of how institutions relate to GVC governance and upgrading (Neilson and Pritchard 2009, Ponte, Kelling et al. 2014).

An important development area of research is the increased interest in the analysis of the effects of a particular chain´s governance structure on the upgrading strategies of suppliers within global chains, with particular reference to farms and firms in developing countries (Ponte 2002, Ponte and Ewert 2009, Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010, Lee, Gereffi et al. 2012, Ponte, Kelling et al. 2014).

One particular issue that is closely related to governance is the literature analysing the role of public and voluntary sustainability standards in agri-food value chains to change upgrading opportunities. These have role in determining the distribution of income and margins from trade between segments of the chain (Ponte 2004, Ponte and Gibbon 2005). Moreover, as a response to criticism of GVC´s vertical analysis (Bair 2009), more recent literature have integrated poverty considerations in value-chain analysis (Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010). This perspective requires an understanding of the outcomes of upgrading strategies not only from the financial perspective of the incomes of participants or even at the distribution of profits and risk in an industry, but also requires the analysis of livelihood activities and networks on which participants depend (Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010). Includes, for example, issues such as poverty alleviation, gender equality, employment outcomes and environment impact (Ponte 2008, Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010).

In order to explore these issues, this thesis explores two different concepts from GVC analysis that are central for its development: the governance of GVCs, and how firms (such as enterprises or farms) adopt strategies of economic upgrading to maintain or improve their positions in the global economy (Gereffi 2014).

GVC governance in this study refers to how economic activities at two different points in the chain are coordinated through non-market relationships and the various ways in which the leading firms exercise control over activities all along the chain (Gereffi, Humphrey et al. 2001, Humphrey and Schmitz 2002a, Gereffi, Humphrey et al. 2005). Governance analysis examines closely where along the chain, and by whom, decisions are taken, such as what goods should be produced, how and by whom (Gereffi, Humphrey et al. 2005), when and in what quantities, and at what price they are to be sold (Humphrey and Schmitz 2001). This examination highlights power inequalities, and the capacity of some more dominant businesses [lead firms or buyers] to shape the activities, capability requirements, opportunities and incomes of others [producers].

In the GVC analysis, economic upgrading refers to either, the capacity of firms and producers to innovate, to make products or processes with more value added, or to shift to more skilled activities in new functional positions than can provide better returns (Humphrey and Schmitz 2002a). Through upgrading, which depends both on the characteristics of suppliers and the competitive requirements of the firms (Fernández-Stark, Bamber et al. 2014), farmers can improve their competitive position and modify their relationships within the governance structure of the value chain (Humphrey and Schmitz 2001, Kaplinsky 2004, Petkova 2006, ECLAC 2008, Bair 2009). Equally, however, upgrading and the opening up of increased opportunities that require greater

capabilities and resources on the part of suppliers has been associated with exclusion, particularly of small farmers, and this point will be discussed further below.

In order to study the nature of the relationships between the buyers and suppliers participating in a global value chain, it is paramount to identify its underlying governance structure (Giuliani, Pietrobelli et al. 2005, ECLAC 2008, Bolwig, Ponte et al. 2010). In this particular, different governance patterns imposed by global buyers that operate in the value chains, have important consequences, not just on producer's sales, but also on the type of upgrading strategies within their reach (Humphrey and Schmitz 2002a, Kaplinsky and Morris 2008).

In order to determine the governance structure of a value chain, [6] GVC analysis relies on the classification developed by Gereffi et al. (2005: 84) and is determined by the value of three main explanatory variables: (i) the level of complexity of information required in a transactions (ii) the codifiability and ease of transactions; and (iii) the level of supplier competence in meeting transaction requirements (Humphrey 2005, Humphrey 2006b). Following this combination of variables, there are five distinct categories of GVC governance between buying firms and their immediate suppliers, ranging from low to higher levels of explicit coordination and power asymmetry (Gereffi, Humphrey et al. 2005):

- *Market* relations are dominant when transactions are easily codified, and suppliers have the capability to produce with little input from buyers. Because the complexity of the information exchanged is relatively low, transactions can be governed with little explicit coordination. Costs of switching to new partners remains low and the market linkages do not have to be completely transitory, such as in spot markets, and can persist over time, with repeated transactions.
- *Modular* value relationships arise when the ability to codify specifications extends to complex products, and when the suppliers have higher capabilities to supply a full-range of services, and are more specialized with little explicit monitoring and control. Because of the ease of codification, complex information can be exchanged with little explicit coordination, and so, the cost of switching to new partners remains low.

[6] Initially, in the literature on value chains, chain governance models were divided between producer-driven chains and buyer-driven chains (Gereffi and Korzeniewicz, 1994). However, as Gereffi pointed out (2014: 13), as the empirical and theoretical studies proliferated these categories "were too broad to capture the full complexity of the GVC governance structures that were emerging in the world". About this respect, some studies pointed out that this categories "did not adequately capture the range of governance forms observed in actual chains, leading to a proliferation of variations on the original theme of drivenness" (Bair 2009: 20).

- *Relational* value chain transactions occur when the product specifications cannot be codified, there are complex interactions between buyers and sellers, and supplier capabilities are high. The cost of switching to new suppliers is high, because the interaction between firms is frequent and interpersonal communications important, due to the exchange of complex information. The capability requirements of both buyer and seller transactions are also high in relational transactions.
- *Captive* (quasi-hierarchical) value relationships arise when the ability to codify and the complexity of product specifications are both high, but the capability of suppliers is low. Therefore small suppliers are dependent on large buyers, who exert a high degree of monitoring and control.
- *Hierarchal* value chains occur when product specifications cannot be codified, products are complex, and competent suppliers cannot be found. This form of governance is characterized by vertical integration within a single enterprise. The dominant form of governance is managerial control, flowing from managers to subordinates or from headquarters to subsidiaries and affiliates.

A great deal of GVC analyses draw a link between different forms of chain governance and the upgrading opportunities, particularly in relation to the upgrading trajectories for firms and farmers in developing countries. Early literature on GVC analysis has highlighted four types of upgrading that a specific actor can implement by improving its capabilities, or acquiring new functions, in the production, processing and the marketing of their product (Gereffi, Humphrey et al. 2001, Humphrey and Schmitz 2002a, Humphrey and Schmitz 2002b). As such, upgrading opportunities in global value chains may derive from a variety of sources:

- The upgrading of processes, under which the productive process is reorganized through the introduction of new technologies, transforming inputs into outputs with increased efficiency.
- The upgrading of products, linked to the addition of value to more sophisticated products, and the application of science to generate lower unit values as a result of increases in productivity and efficiency or lower production costs.
- The functional upgrading, or “upgrading within chains”, which has enabled producers to seek price increases resulting from the acquisition of new functions in the chain, such as design or marketing, or by abandoning existing low-value added functions to focus on higher value added activities.

- Intersectoral upgrading, which involves the possibility of using skills acquired in one chain in another sector upgrading[7] (Gereffi, Humphrey et al. 2001, Kaplinsky and Morris 2008, Kaplinsky 2010).

The literature then associates different types of upgrading with different governance relationships. It is argued that product and process upgrading is more likely to take place in the captive (quasi-hierarchical) form of chain governance, in particular if competent suppliers could not be found (Sturgeon 2009). In this case, buyers may provide support to local producers to comply with the requirements and performance imposed by the buyer, although these buyers may have little interest in promoting the acquisition of capabilities for functional upgrading (Humphrey and Schmitz 2002b, Giuliani, Pietrobelli et al. 2005). Support from the buyers to enable suppliers to engage in product and process upgrading is particularly likely to happen if the quality of the product depends of the skill and competences of local producers, or when the producers are in the first stage of integration into the GVC. In this situation, buyers will have an interest in promoting the fast acquisition of production capacities of their suppliers. In contrast, buyers may have little interest in transferring functions to suppliers if these are already being carried out by other businesses within the chain. However, the development of supplier competence for upgrading, combined with developments in codification may prepare the ground for modular governance (Sturgeon 2009).

Acquiring new functions in the chain, and shifting to a more rewarding functional position (i.e. by moving from production to design or areas related to branding, logistic and marketing) more often occurs in market-based and relational value chains (Giuliani, Pietrobelli et al. 2005, Ponte and Ewert 2009). For example, Giuliani et al. (2005) mentioned that functional upgrading was achieved by selling to buyers located in regional and domestic markets instead of global markets.

More recent literature has challenged this four-type classification of upgrading and has identified additional upgrading trajectories within agri-food value chains (Ponte and Ewert 2009, Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010, Ponte, Kelling et al. 2014). By matching some of the categories above, and even going beyond them, recent empirical evidence suggests that upgrading trajectories can be grouped into two broad categories: (i) improving products, processes, volumes, and/or variety in the same value chain node; and (ii) changing and/or adding functions (up or down-stream) in several value chain nodes (Ponte, Kelling et al. 2014). Producers can deliver larger production volumes (in some cases at a lower quality), comply with standards and certifications, successfully deliver on logistics and lead times, and obtain a better price for the same

[7] This type of upgrading is not really relevant to this dissertation as has not been used by the coffee-growers in Colombia.

product, as is the case with fair trade (Gibbon, 2001; Gibbon and Ponte, 2005; Ponte, 2009). Specifically, 'functional downgrading', combined with economies of scale, can also be successfully employed to maximise returns or to remain in an increasingly demanding value chain (Ponte 2008, Ponte and Ewert 2009).

Ponte et al. (2014) argue that product upgrading does not necessarily lead to products with increased unit value, since benefits can be accrued to farms by delivering larger volumes of the product without shifting into more sophisticated products (even of lower quality) (Ponte, Kelling et al. 2014). Meanwhile, process upgrading could suggest improved production procedures which do not necessarily make production more efficient, but improve farmers' position in the value chain nonetheless.

Recent contributions in value chain studies have suggested that assessing the implications of any upgrading strategy must integrate vertical and horizontal elements of value chain analysis (Bolwig, Gibbon et al. 2009, Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010). This proposition implies a broader definition of upgrading that goes beyond both incomes and effects of participation, or power relations within the chain. The contemplation of a 'horizontal' analysis of value chains, requires an understanding of upgrading strategies not only from the financial perception of rewards and risk, but also in relation to broader issues of local development such as poverty alleviation, gender equality, labour and environment impact. Thus, notwithstanding potential increases in income, derived from upgrading strategies, improved security and reliability of these incomes will enhance overall welfare, such as broader societal and environmental benefits (Riisgaard, Bolwig et al. 2010). A detailed quantitative examination of these broader issues in the Colombian context are the main focus of chapters 6 and 7.

2.3 Trends in agri-food value chains

Over the past two decades, the growing trade of agricultural and food products has been accompanied by a dramatic transformation in the agricultural standards landscape both internationally, nationally, and within individual value chains.

Economic globalization has given birth to a generation of new business strategies that have transformed relationships in terms of the production, processing, marketing and sale of commodities (Gereffi, Humphrey et al. 2001, Bain, Deaton et al. 2005, ECLAC 2008, Gibbon, Bair et al. 2008, Bair 2009). Producers are facing/meeting increasing market demands from both consumers and buyers, in order to avoid exclusion from the most lucrative markets. These trends in agri-food value chains compel producers to develop their labour force and improve their capabilities for upgrading in terms of

management, technology and organization, which was not the case when the products on the market were homogenous (ECLAC 2008).

Consumer awareness of food, including the growing importance of "conscious consumption", has pushed consumers to spend more of their money in a socially and environmentally responsible way (Ponte 2002, Hatanaka, Bain et al. 2005, Ponte and Gibbon 2005). This is reflected in increased concern with food safety standards, social and environmental process standards (Ataman and Beghin 2005, Bain, Deaton et al. 2005, Jaffee and Henson 2005, World Bank 2005, WTO 2005).

In order to respond to changes in consumer patterns, and increased government pressure to improve food safety and public standards (Gereffi, Garcia-Johnson et al. 2001, Humphrey 2005), buyers are placing more complex demands on producers, in order to attain "product variety, improved quality, reliability of delivery, new product differentiators and greater control of risk relating to product safety" (Humphrey 2006b: 588, World Bank 2007). These standards have been established by companies either to differentiate their product from those of competitors (Humphrey 2005), to indicate superior quality features (Henson and Humphrey 2010) or by motives of defensive brand management (Neilson 2007, Neilson 2008, Neilson and Pritchard 2009).

The characteristics of these trends that are of most relevance to the coffee value chains, are: (i) the increasing importance of product differentiation based on credence characteristics (authenticity of origin, sustainable and environmental production processes, fair trade attributes, etc.) (Reardon, Codron et al. 2001, Anholt 2003, Dolan and Humphrey 2004, Humphrey 2005, Ponte and Gibbon 2005, Humphrey 2006a, Potts 2007), and (ii) the increased proliferation of private standards, labels and certifications systems, both in private and public spheres, which has been remarked by several authors (Hatanaka, Bain et al. 2005, Humphrey 2005, Humphrey 2006a, Humphrey 2006b, Raynolds, Murray et al. 2007, Humphrey 2008, Henson and Humphrey 2010, Courville 2011).

2.3.1 Credence claims

A "credence" good is one whose characteristics cannot be verified by inspection prior to purchase (a "search" good) or through consumption (an "experience" good) (Reardon, Codron et al. 2001, Jaffee, Henson et al. 2011). A search good is one for which the attributes that matter to potential consumers can be verified through direct inspection. A consumer might, for example, be able to verify whether a product is fresh or not through direct inspection. Credence claims about origin, environmental impact, social impact, etc., cannot be verified through inspection or consumption (Reardon, Codron et

al. 2001). Therefore, the consumer's belief in these characteristics, and the product's intrinsic quality, relies on a more complex work process, as these characteristics cannot be "objectively verified and are based on trust" (Ponte and Gibbon 2005: 2). Among the attributes that constitute credence claims, are the production and process methods related to claims about safety (e.g. pesticide residues), food quality, environmental and socio-economic impact (e.g. Fairtrade, Organic or Rainforest Alliance) or authenticity of origin (such as regional branding or geographical indications) (Reardon, Codron et al. 2001, Anholt 2003, Dolan and Humphrey 2004, Humphrey 2005, Ponte and Gibbon 2005, Humphrey 2006a, Potts 2007).

Credence claims can modify and reorganise the GVC governance structures between buyers and suppliers in agri-food value chains (Duguid 2003), as well as the terms of trade faced by producers (Potts, Fernandez et al. 2007). Humphrey (2005, 2006b) argues that "these claims act as a form of product branding, identifying particular labels with particular characteristics that may be valued by consumers" (Humphrey 2005: 6, Humphrey 2006b).

Depending on the point in the value chain at which the credence good is defined (Humphrey 2005), there are the economic benefits accruing to those controlling the intellectual property rights of the credence claim (Duguid 2003).

For example, if the credence attributes are linked to a specific origin, the goods produced by farmers have an identity in the world markets, and create barriers to entry, allowing them to increase their bargaining power and incomes (Duguid 2003, Humphrey 2005, Humphrey 2006a). Therefore, credence claims' attributes can be used not only as a form of brand identity that distinguishes the goods from their competitors in the eyes of the consumers (Henson and Reardon 2005), but also as a mean of creating a countervailing power that can alter power relations and shape the distribution of wealth within global value chains.

2.3.2 Global standards

The emergence of standards, as an mechanism of GVC governance to coordinate supplier activities in global agri-food chains, have reshaped and transformed power relations among actors from the local, national and international levels of the global agri-food sector (Gereffi, Garcia-Johnson et al. 2001, Bain, Deaton et al. 2005, Higgins and Lawrence 2005). While the main function of standards is still to provide information to stakeholders, recent trends in the agri-food sector has changed the nature, function, purpose and scope of this regulation and verification mechanism (Humphrey 2005, World Bank 2005, WTO 2005, Humphrey 2006a). The fast evolution and multiplication

of different type of agri-food standards has deep repercussions, not only in economic and financial terms, but also in relation to poverty, labour and environmental relations within agricultural and food systems (Henson and Reardon 2005, Riisgaard, Bolwig et al. 2010).

As a consequence, the current standards environment has led the agri-food sector to a new policy-regulatory environment with growing complexity (Humphrey 2006a, Humphrey 2006b), that has profound repercussions for the competitiveness of individual producers and institutions in developing countries (Henson and Reardon 2005). Today, a farmer who wants to participate in the most dynamic value chains, must meet stringent, complex and un-harmonized agri-food standard requirements demanded by several types of buyers, and their product has to be certified to one or more standards (Jaffee and Henson 2005, World Bank 2005, Humphrey 2008, Kaplinsky and Morris 2008, Henson and Humphrey 2010).

When discussing global standards in food and agriculture, a distinction between *public* regulation and *private* standards can be made (Humphrey 2005, WTO 2005, Giovannucci, Liu et al. 2008, Henson and Humphrey 2010, Von Hagen and Alvarez 2011). It is often argued that public standards (or regulations) are mandatory, and private standards are voluntary, although Henson and Humphrey (2010) point to cases where public standards are voluntary (where governments provide standards that firms may choose to follow or not) and private standards become mandatory because governments adopt them and oblige companies to conform to them.

A second important distinction is between *baseline* and *premium* standards (Kirk-Wilson 2002). While baseline standards are designed to ensure that products meet certain minimum standards, premium standards are designed to differentiate products, showing that they are in some way superior to “normal” products. There are two reasons why this distinction is important. First, the dynamics of exclusion may be different in the two types of standards. The same applies for benefits. The argument that standards increase obligations without giving much in return may well apply to baseline standards, but not necessarily to premium standards in the same way. Second, the types of organisations and coalitions that support these different standards are not necessarily the same.

Private agri-food standards, which are central in this study, are developed by a variety of actors and for a variety of reasons, such as a means of establishing the basis for making claims about credence characteristics. Some standards have been created by commercial companies (or coalitions of firms), others by non-commercial private bodies,

such as non-governmental organizations or industry organizations (WTO 2005, Henson and Humphrey 2010).

One critical element in a standardised the scheme that checks compliance and restrict use of the standard to those establishments (farms, firms, etc.) whose practices have been verified to be in accordance with the standard. In order to develop this voluntary governance mechanisms (Gereffi, Garcia-Johnson et al. 2001) private standards setters have used certification bodies and labelling schemes to ensure these standards are enforced (Gereffi, Garcia-Johnson et al. 2001, Busch and Bain 2004, Bain, Deaton et al. 2005, Hatanaka, Bain et al. 2005, Raynolds, Murray et al. 2007). In some cases, these standards are developed by companies that impose their own requirements to coordinate supplier activities and implement value chain governance (Humphrey and Schmitz 2001, Bain, Deaton et al. 2005, Von Hagen and Alvarez 2011). In other cases, businesses adopt standards developed by independent organisations, which reduces the costs of developing and enforcing the standard.

In sum, private buyers are increasingly using private standards as a strategic business tool (Hatanaka, Bain et al. 2005) for a number of reasons: 1) to verify compliance and the conditions under which the goods were produced and traded; 2) as a way to transfer the cost of compliance onto their suppliers (Bain, Deaton et al. 2005, Humphrey 2006a); 3) to reduce the cost of information about product attributes reaching final consumers (Muradian and Pelupessy 2005); 4) to meet value chain management needs; and 5) to gain credibility among consumers and reduce their exposure to the risk of loss in reputation (Byers, Giovannucci et al. 2008).

2.3.3 Trends in agri-food standards

Humphrey (2006a) highlights four main trends in the recent evolution of standards in agri-food value chains, two of which are relevant to the discussion of coffee value chains: 1) the shift from product standards to process standards; and 2) the increasing scope of standards. An additional trend needs to be highlighted at this point, since it is particularly relevant to the coffee sector, which is the emergence of the so-called third party certification organizations (TPCs) for the certifications of suppliers (Gereffi, Garcia-Johnson et al. 2001, Muradian and Pelupessy 2005, Raynolds, Murray et al. 2007).

One of the most important trends in global agri-food chains is the shift from product standards to process standards,[8] both public and private (Busch and Bain 2004, Bain,

[8] Sustainable standards dealing with socio-economic and environmental standards are two examples where the value of the goal to be achieved lies in the processes themselves. Process standards cannot be verified by examining the final product (Reynolds, Murray et al. 2007).

Deaton et al. 2005, Hatanaka, Bain et al. 2005, Higgins and Lawrence 2005, Humphrey 2006a, Raynolds, Murray et al. 2007, Giovannucci 2008, Neilson 2008). Standards have evolved from simply specifying the physical characteristics of a product, to those specifying the characteristics of the production and handling process (WTO 2005, Humphrey 2006a). There are two reasons for this shift. First, whereas the first one merely defines the nature and quality of a product exchanged between anonymous economic agents, the second involves a set of rules, principles, or production guidelines that are designed to achieve quality, cost and delivery more efficiently (WTO 2005, Kaplinsky and Morris 2008). The second reason for the shift to process standards is the fact that certain processes (for example, environmentally responsible production) themselves have value for companies and consumers and need to be specified, monitored and enforced.

The development of these private standards to control processes involves five different elements that may be carried out by different actors. According to Henson and Humphrey, the operationalization of a private standard involves: (1) setting the standard; (2) adoption of the standard; (3) implementation of the standard by the organization that is conforming the standard; (4) verification of its implementation through the conformity assessment; and (5) enforcement to avoid non-compliance (Henson and Humphrey 2012).

This transition from product controls to process controls is evident in many areas (Humphrey 2005, Humphrey 2006a). Labour and environmental standards are two examples where the value of the standard to be achieved lies in the process itself (Humphrey 2005). The coffee sector, in particular is one of the most important agri-food industries in terms of both the number and frequency of use of process standards related to quality and conditions under which coffee is produced (Muradian and Pelupessy 2005, Raynolds, Murray et al. 2007, Giovannucci, Liu et al. 2008). These process standards as help to specify which parameters other producers would have to conform to, how strictly they should be followed, and what audits would be necessary.

Another significant characteristic in trends in the standards for the agri-food sector deals with the increasing array of concerns that are addressed by private standards promoted by individual businesses, groups of businesses, and a variety of alliances involving businesses, NGOs. (Humphrey 2006a). Growing consumer concerns, which have already been discussed, have pushed retailers to broaden the scope of standards, to differentiate and add value to their products (Humphrey 2006a).

In the specific case of the coffee value chain, a wide of actors have developed and implemented a plethora of private standards to address growing consumer concern

about issues related to production methods (for example, Organic certification), ethical trade and poverty alleviation (e.g. the Fairtrade standard), environmental protection (e.g. Rainforest Alliance). Additionally, companies have set private standards to differentiate their product from those of their competitors and to indicate superior quality features for example, C.A.F.E. Practices from Starbucks or Nespresso AAA from Nestlé (Henson and Humphrey 2010).

Perhaps the most significant trend in agri-food value chains, in relation to the coffee sector, is the move by global buyers and coalitions of private firms, from first and second party certification, to independent and external certification institutions, known as third party certification (TPC) bodies (Gereffi, Garcia-Johnson et al. 2001, Busch and Bain 2004, Bain, Deaton et al. 2005, Hatanaka, Bain et al. 2005, Humphrey 2006a). Likewise, as Hatanaka (2005) mentioned, plenty of NGOs have launched "their own labelling programs and TPC schemes to distinguish 'alternative' agricultural products from products produced using 'conventional' practices" (Hatanaka, Bain et al. 2005: 354). Examples of such NGOs include, the four major coffee production standards: Fairtrade Labelling Organizations International (FLO), the International Federation of Organic Agriculture Movements (IFOAM), the UTZ Certified and the Rainforest Alliance (RA) (Panhuysen and VanReenen 2012), as well as the Marine Stewardship Council (MSC) and the Forest Stewardship Council (FSC) in other agri-food and forest sectors (Hatanaka, Bain et al. 2005, Giovannucci 2008).

In this shift, from second party certification (by the buyer) to third-party certification (by an independent organisation not involved in the transaction), responsibility for monitoring compliance to a standard is transferred to independent companies (known as Certification Bodies). Alternatively, an agent who initially developed a standard, may abandon it altogether in favour of an independently-created standard, which will be designed and managed by one organisation and certified by others.

What has led to the development and proliferation of these standards-setting organisations and certification bodies? Their advantages lie in their supposed credibility given their independence from other participants involved in food or agricultural production - including producers, governments and corporate coordination bodies (Lewin, Giovannucci et al. 2004, Raynolds, Murray et al. 2007). Other qualities that distinguish TPCs are their claims of transparency, impartiality and objectivity (Hatanaka, Bain et al. 2005: 355, Raynolds, Murray et al. 2007). In the same vein, Bain et al. (2005) pointed that TPCs help "overcome the potential failures that may emerge in uncertain situations characterized by asymmetric distribution of information" (Bain, Deaton et al. 2005: 76). As a result, TPC institutions have emerged as an leading regulatory mechanism that governs agricultural and food chains that is "transforming traditional

power relations in the global arena" (Gereffi, Garcia-Johnson et al. 2001: 64) since it is responsible for accessing, evaluating and certifying food safety, food quality and alternative production systems that claim a wider social and environmental impact (Hatanaka, Bain et al. 2005).

This move towards third party certification offers important benefits for buyers that first or second party certification do not. Hatanaka highlights at least five such advantages (Hatanaka, Bain et al. 2005): (i) the transfer of responsibilities to third-party certifiers to assure product safety and quality; (ii) the reduction of the costs of monitoring for food safety and quality, as the cost of auditing is transferred downstream in the chain (Bain, Deaton et al. 2005, Hatanaka, Bain et al. 2005, Humphrey 2006a). Buyers are free to reallocate these financial resources to other areas, such as "investments in R&D" (Hatanaka, Bain et al. 2005: 360); (iii) when effective, third-party certification may minimize legal liability for outbreaks of foodborne illnesses, since buyers can claim that they are taking adequate precautions by adopting TPC – in other words, exercising due diligence; (iv) the use of TPC as a marketing tool to add value, capture market value and increase their profits (Bain, Deaton et al. 2005); and (v) reduction of transaction costs and increase efficiency for buyers, by assuring the coordination of their supply chains and reducing the risk of product failure.

This trend, of moving from first or second party verification to TPC institutions is evident in the coffee sector. For example, Utz Certified (formerly Utz Kapeh) programme moved to a TPC in 2005, while Nestle-Nespresso announced in 2009 that farms supplying to the Nespresso AAA Programme, will have to certify their coffee with Rainforest Alliance Certification and comply with the Sustainable Agriculture Network (SAN) standards (Nestlé-Nespresso 2009b, Nestlé-Nespresso 2009c, Nestlé-Nespresso 2011b).

2.4 Private standards: upgrading and farmer livelihoods

There has been a great deal of discussion, yet little agreement, on the question of how the adoption an increasing number of private agri-food standards and credence claims has affected the upgrading opportunities of agricultural producers, and how these initiatives have contributed to improve farmer livelihoods in developing countries. Current research on the effects of the propagation of private standards on the value chain organisation, and distribution of income and margins between segments, is not conclusive (Ponte and Gibbon 2005, Henson and Humphrey 2010). Moreover, it is not clear if the use private standards in agri-food value chains, actually guarantees economic benefits for participating producers through higher price premiums, improved yields, lower production cost at farm level or reduced price volatility at farm gate (Giovannucci, Josling et al. 2009).

Recent literature on value chain research has paid little attention to the understanding of the risk and rewards small producers face when upgrading through the adoption of private agri-food standards (Ponte and Ewert 2009, Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010). To correct for this, these authors suggest that the assessment of the implications of upgrading should focus on the full range of risks and/or rewards that participation in these chains provides to small and vulnerable producers. In this sense, the analysis should look beyond the incomes of participants, or even the direct effects on income distribution, and concentrate "both in financial terms and with regard to outcomes related to poverty, gender, labour and the environment" (Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010).

By meeting standards and obtaining certifications, farmers can achieve two types of benefits: direct and indirect benefits. In the first case, insertion into some types of value chains may lead to increasing the value added to their products through higher prices once farmers gain access to new and more profitable market segments (Hatanaka, Bain et al. 2005, Raynolds, Murray et al. 2007, Giovannucci and Purcell 2008). In the second case, producers can achieve export growth, sustainable income growth, and economic development (Navas-Alemán and Bazan 2005) by implementing long-term buyer-seller relationships that facilitate greater access to financing and safe working conditions for producers (COSA 2013) or taking part of new niche markets (Raynolds, Murray et al. 2007).

Actors in the agricultural sectors of developing countries saw the emergence of private standards, as a tool to improve the welfare and livelihoods of producers (Alvarez and Von Hagen 2011, Von Hagen and Alvarez 2011, Potts, Lynch et al. 2014). Notwithstanding this, producers face costs in adapting to standards: new and more demanding skills must be developed, and this requires time, if not investment (Humphrey 2006a, Humphrey 2006b). Additionally, the necessary investment for completing the process associated with standard compliance is expensive, elaborate, difficult and may take years (Daviron and Ponte 2005, Giovannucci, Liu et al. 2008). Suppliers must have access to technical assistance and training to develop the knowledge and managerial skills needed to comply with standards and certifications (Daviron and Ponte 2005, Fulponi 2006, Humphrey 2006a).

Additionally, farmers need time and access to economic resources to afford the direct and indirect costs of meeting standards (transition costs that include investments in production facilities, physical equipment, buildings and improving farming practices, and certification costs), added to the recurrent cost of standards maintenance (costs of

inspections, certification and monitoring, among others),[9] and the opportunity cost (Jaffee and Henson 2005, Humphrey 2006a, Potts, Opitz et al. 2007, Kaplinsky and Morris 2008, Henson, Jaffee et al. 2009). It is worth mentioning, however, that in some cases, buyers may contribute to offsetting costs and increasing capabilities to assist producers compliance to a new standard.

Two differing views exist in the literature as a response to this balance of potential benefits and required expenditures and capabilities. The dominant discourse, asserts that the proliferation of standards excludes smaller-scale participants from competitive markets and drives them to less profitable markets (Dolan and Humphrey 2004, Hatanaka, Bain et al. 2005, FAO 2006, Fulponi 2006), since they are unable to meet the requirements of the new chains or the costs of accessing them. Conversely, others argue that the compliance process can help small farmers to build competitive advantages that lead to a long-term and profitable trade relationship with buyers (Auld 2010), with benefits in terms of enhanced livelihoods (Henson, Jaffee et al. 2009).

Research supporting the exclusionary effects of standards on small scale producers, points to the growing body of qualitative evidence that shows that compliance to new and more complex coordination requirements (Giovannucci and Purcell 2008), imposed by the standards and certifications systems, is difficult for many small and medium sized producers (Bain, Deaton et al. 2005, Hatanaka, Bain et al. 2005, Humphrey 2006a, Giovannucci, Liu et al. 2008, Giovannucci and Purcell 2008, Neilson 2008, Kaplinsky 2010).

Indeed, many scholars support the argument that private agri-food standards and certifications systems act as barriers that “create a race to the bottom” (Muradian and Pelupessy 2005: 2038). They argue that, while new standard-oriented markets can be lucrative, small and vulnerable producers are more likely to be excluded and lose their market share since they lack the necessary competences and resources, and face deeper infrastructure constraints (Dolan and Humphrey 2004, Lewin, Giovannucci et al. 2004, Bain, Deaton et al. 2005, Hatanaka, Bain et al. 2005, Humphrey 2006a, Giovannucci and Purcell 2008, Kaplinsky and Morris 2008, Ponte 2008, Raynolds 2009).

In contrast, other scholars have contributed to the debate claiming that standards are not exclusionary for small producers, since the compliance process could help them build competitive advantages, so that they can preserve or even improve their role in agri-food chains (Maertens and Swinnen 2008, Henson, Jaffee et al. 2009). In fact, it is argued that, in certain circumstances, smallholders can benefit significantly, if they

[9] In this regards, Potts et al. (2007) pointed out that the cost per unit for reaching compliance may vary inversely with farm size.

become suppliers to a buyer who is determined to purchase their product, even when this implies additional assistance for standard compliance (Maertens and Swinnen 2008, Henson, Jaffee et al. 2009).

Recent studies have provided qualitative evidence that shows that some private standards, specifically those oriented toward sustainability, have made significant efforts to engage small producers (Lebel 2012) to improve their competence and equity in value chains (Fontaine et al., 2008; Swinnen, 2007 cited by Ruben and Zuñiga 2011). Supporting this argument, other authors sustain that some labels, such as Organic or Fair Trade standards, could favour small holders, as they were designed specifically for them (Giovannucci and Purcell 2008, Lebel 2012). This is different from labels such as GlobalGAP which tends to exclude small producers with its stringent standards (Lebel 2012). For example, the fact that under the Fair Trade standards, producers could receive a minimum price for their harvest, or receive pre-financing for their production, ensures that small producers can obtain welfare benefits by meeting private standards and achieving certifications (Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012).

However, several researchers agree that there is an increasing demand for effective impact evaluation on the outcomes and possibilities for these initiatives over time (Lewin, Giovannucci et al. 2004, Muradian and Pelupessy 2005, Potts 2007, Teuber 2007, Linton 2008, Neilson 2008, Raynolds 2009, Beuchelt and Zeller 2011, Von Hagen and Alvarez 2011). Despite an extensive literature review on the impact of VSS [almost exclusively on Fairtrade] that suggests that producers have received both direct and indirect benefits from adopting VSS, a growing body of researchers argues that a common limitation in these studies is the absence of long-term impact assessments using statistically valid data.

Without this type of empirical evidence, it is not possible to accurately determine whether participation in different forms of GVC governance [throughout the adoption of different kinds of VSS] has progressively improved the producers' ability to innovate in different spheres of economic upgrading to increase their incomes and improve the livelihood and well-being of farmers as a result (Von Hagen and Alvarez 2011). More recently, cross-country surveys used in rigorous impact studies involving at least two rounds of surveys to assess differences over time, have showed that the involvement in VSS leads to modest increases in farmers' incomes and improvements in farm production methods (Hoebink, Ruben et al. 2014) and its impact in addressing poverty and livelihoods is limited and "should not be overestimated" (Ruben 2014, p. 41) as certified production cannot be the only tool to boost producers´ socioeconomic status (PCS 2015).

2.5 Role of local institutions in supporting small farmers' in standards compliance

The evidence underlining the difficulties small farmers face, when complying with increasingly complex agri-food private standards, has facilitated a general consensus on the need to support small farmers' ability to meet standards' requirements. As a result, a variety of actors, such as private sector companies, and NGOs, governments and development agencies, also known as donors, are offering this type of support and assistance to small farmers, and in certain contexts may do so collaboratively.

The central issue for donors is to "combine technical assistance with connectivity" (Humphrey and Schmitz 2001: 24) and to reduce poverty and to achieve the MDG poverty reduction goals (Humphrey 2008). Meanwhile, for international traders, exporters and mayor branded companies, these partnerships are important not only to because this helps them to increase scale (Jenkins, Akhalkatsi et al. 2007), or to dictate production and trade conditions, but also to "greenwash" their image (Ponte and Gibbon 2005, Fulponi 2006, Neilson 2008) through different strategies of corporate social responsibility (Porter and Kramer 2006) or creating shared value (Porter and Kramer 2011).

In this sense, farmer support might be directed to three main areas: First, capacity building to reach certification, such as access to extension services, training (literacy and IT literacy), technical assistance, follow-ups to improvements plans, process verifications, and among others. Second, to compensate or alleviate the costs for the conversion process and certification, as well as the necessary investments and the recurrent and non-recurrent cost of compliance. Third, to promote sectorial development (Henson, Jaffee et al. 2009: 7) compensating for the "lack [of] administrative, technical and scientific capacities" in many developing countries (Jaffee and Henson 2005: 92), for example, by bolstering "industry organizations, certification and accreditation systems, laboratory services, etc." (Henson, Jaffee et al. 2009: 7).

These collaborative efforts may work best together (Auld 2010), only if there is considerable inter-agency coordination and collaboration, and donors take into account that getting a certification is not a "necessary condition of access" and integration of small farmer and farmer groups into agri-food chains is absolutely necessary condition of success for producers (Humphrey 2008: 49).

Based on the extensive fieldwork of the author, it is evident that in the specialty coffee value chain, donors and buyers have provided significant support to small producers to ensure they meet the requirements of the many standards and certifications operating

in the industry. This role of donors and buyers in the specialty coffee value chain will be further examined in chapter five.

2.6 Conclusions

There has been little agreement on the question of how the adoption of VSS in the coffee industry initiated at various levels, has affected the upgrading opportunities of the coffee growers. For producing countries, in particular, there is considerable interest in its potential to add value at the farm level, as well as its impact on providing an alternative development approach for rural regions and shaping governance structures within global value chains. Additionally, it is necessary to know if the adoption of VSS has contributed to the ability of producers to innovate in different spheres of economic upgrading to increase their incomes and improve the livelihood and well-being of coffee growers as a result.

Research into the role of more recent VSS in developing countries is very limited and has received less attention than in developed countries (Giovannucci and Ponte 2005, Giovannucci and Purcell 2008). Most of the information is anecdotal and data analysis is scarce or non-existent as few studies have quantified the overall outcomes and impacts of these initiatives (COSA 2006, COSA 2008, Giovannucci and Potts 2008, Giovannucci, Liu et al. 2008a, Blackman and Rivera 2010, Leibovich, García et al. 2010, Alvarez and Von Hagen 2011, Pierrot, Giovannucci et al. 2011, Giovannucci, Scherr et al. 2012, Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012). The analysis of the impacts between the most important certifications and verifications' systems are scarce and do not include the most recent value added initiatives (Daviron and Ponte 2005, Giovannucci and Ponte 2005, Muradian and Pelupessy 2005, Potts, Fernandez et al. 2007, Raynolds, Murray et al. 2007, Auld 2010, Potts, Van der Meer et al. 2010).

This situation has been confirmed in a recent study commissioned by the International Trade Centre (ITC), a joint agency of the World Trade Organisation and the United Nations (Von Hagen and Alvarez 2011), and more recently by Ruben (2014), and Hoebink et al. (2014). After applying a systematic literature review on the impact of private standards on global value chains, the main conclusion is that there is limited empirical evidence about the question of whether VSS enhance upgrading opportunities. Additionally, a growing body of researchers considers that the available information does not provide compelling evidence that VSS are achieving their purported socioeconomic and environmental benefits (Giovannucci and Potts 2008, Blackman and Rivera 2010, Alvarez and Von Hagen 2011, Von Hagen and Alvarez 2011, Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012).

The main methodological conclusion is that the available knowledge today lack of a convincing methodology and research designs that makes difficult to attribute outcomes directly to the adoption of the competitive requirements of standards and certifications systems (Giovannucci and Potts 2008, Alvarez and Von Hagen 2011, Von Hagen and Alvarez 2011, Giovannucci, Scherr et al. 2012). According to Von Hagen and Alvarez (2011), not only "a systematic analysis of value chain impacts across standards and products providing quantitative, statistically valid data is lacking", and that the available "data is not comprehensive enough to make standard or product specific conclusions," but also "future research particularly needs to foster the definition of widely agreed upon indicators that allow a comparison of results. At the same time quantitative measures of impact are a precondition for comparability across standards, value chains and countries" (Von Hagen and Alvarez 2011: ix-x).

Both qualitative and quantitative comparisons have been carried out among the most important coffee certification and labelling initiatives which have shown critical and significant differences between certifications related to their governance structures, socio-economic and environmental standards, or their market relationships (Muradian and Pelupessy 2005, Raynolds, Murray et al. 2007, Neilson 2008, OXFAM 2009, Leibovich, García et al. 2010, SCAA 2010, García, Ochoa et al. 2011). Therefore, a comparison of VSS is required because they are likely to have different impacts.

However, to enrich global value chain analysis more studies are needed to address the effects at household level of the adoption of VSS initiated by the corporate sector, NGOs, and producers at various levels. Till present, there has been little agreement on the question of how the adoption of VSS have affected the upgrading opportunities of agricultural producers. Nor is agreement on the socio-economic benefits to farmers that arise from the introduction of different types of standards and the product differentiation they create. This dissertation fills this gap in knowledge through a detailed quantitative and comparative study of different VSS in the coffee sector.

CHAPTER THREE
Methodology

3.1 Introduction

The overall concern of this thesis is to evaluate how participation in Voluntary Sustainability Standards (VSS) adopted by Colombian coffee producers has affected their upgrading strategies, and the extent to which its adoption has resulted not only in economic benefits but has also improved rural livelihoods for them. The main purpose of this chapter is to explain how this study went about answering the two interrelated research questions discussed in the previous chapter:

- How has participation in distinct types of differentiated channels, such as private standards, certification schemes, and labels etc., affected the upgrading strategies of coffee producers in the specialty coffee value chain?
- How have these new value added initiatives affected the pattern of revenues for producers, and their exposure to risk and vulnerability in the specialty coffee value chain?

In order to answers these questions, this study employs impact evaluation methodologies to conduct an assessment to compare the performance of selected outcome indicators between a group of producers affiliated to Fairtrade and Nespresso AAA, and their respective control group which operates as a counterfactual. The study is based upon a quantitative quasi-experimental approach using panel data with a four-year time interval from three rounds of surveys for the same group of coffee producers, with information from the harvest seasons of 2008, 2009 and 2011.

In order to construct statistical comparison groups, and address self-selection bias as much as possible, in addition to controlling for independent factors that may affect many of the observed changes, a combination of Propensity Score Matching (PSM) with Difference in Differences (DID) analysis was implemented. Therefore, this study combines a "with and without" assessment, with a "before and after" analysis, which implied, on the one hand, the construction of a credible counterfactual, to ensure that the certified group of farmers are matched with their 'closest neighbour' (the control farmer that is most similar), and on the other hand, the possibility to assess differences over time (a baseline, a follow up, and the evaluation).

Additional information was obtained during two periods of field work in Colombia. This includes information from focus groups with farmers, and interviews with coffee value

chain actors. Secondary data were gathered through archived documents and extensive documentation provided by different organisations and those available on the internet.

Counting on the comparable data, a model is proposed to identify whether the affiliation of coffee producers to Fairtrade and Nespresso, compared with their respective control group of producers, could catalyse farmers´ capacity to innovate in different spheres of economic upgrading, change returns from coffee and improve key livelihood variables.

This chapter is structured into eight sections. After this introduction, the second section justifies why coffee and Colombia were selected for this study, the third section discusses why the author selected two specific VSS to represent value added strategies. The fourth section describes the research methods used and highlights the fact that a mixed methods approach is used to answer the main questions. The fifth presents a pre-treatment comparison of the sample of producers. The sixth and seventh sections explain the analytical approach and how the key concepts used in this thesis were operationalised. The eighth section deals with the details of the fieldwork carried out in Colombia.

3.2 Why the adoption of voluntary sustainable standards in the Colombia coffee sector was studied?

Coffee is one of the most valuable export crops in the world market and maybe the most important certified commodity using VSS in all sectors including agriculture and food (Giovannucci, Scherr et al. 2012, Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012). Millions of producers are adopting these initiatives and it was expected that by 2015, nearly 40% of the global exports would cover aspects of speciality markets and aspects related to sustainability issues (Giovannucci, Scherr et al. 2012, ITC 2012). However, producers are participating in these initiatives without certainty about their outcomes and impacts or durability of impacts.

The Colombian case study was chosen for five reasons: (i) it became the first coffee producing country to embark on an active strategy of differentiation and marketing its product in the coffee world (Deshpande 2001, Giovannucci, Leibovich et al. 2002, Reina, Silva et al. 2007, WIPO 2007, Hughes 2009, Juglar 2009, The Economist 2010). Since 1960, Colombia's unified marketing campaign and brand development of coffee was conducted through a *differentiation strategy*, from which the "100% Colombian coffee"

programme was the basic strategy and the Juan Valdez® character[10] was the image to promote Colombian coffee as the best in the world; (ii) currently, Colombia is the world´s third largest coffee exporting country and the biggest producer and exporter of Mild washed Arabicas; (iii) additionally, not only is Colombia one of the main producers of speciality and sustainable coffee, but also a pioneer in successfully embarking on an active strategy of differentiation and marketing its products in the coffee world using regional identities (ITC 2002, Teuber 2007, Giovannucci, Josling et al. 2009, Hughes 2009); (iv) recently, in order to protect the Colombian origin, Colombian coffee authorities have been supporting efforts to get unique regional coffee into the market place through the implementation strategy of Geographical Indication in the European Union, Denomination of Origin in the Andean Community Countries and Certification Marks in the United States and Canada, as well as a trademark in over 140 countries worldwide (Giovannucci and Samper 2009, Lozano, Samper et al. 2012, Samper 2012); and (v) the important role that regulation and public sector support have played in facilitating upgrading for coffee growers[11] (Bates 1997, Thorp 2000, Deshpande 2001, Lozano 2011). Most of the research was found to focus on a relatively limited number of countries like Nicaragua, Peru or Uganda without the institutions, the regulatory framework and marketing regimes that exist in Colombia.

3.3 Why Fairtrade and Nespresso AAA were selected as value-added initiatives to study in this thesis?

The coffee sector is one of the most important agri-food industries in terms of both the number and frequency use of VSS (Giovannucci, Liu et al. 2008a). These strategies for adding value and differentiating coffee products can be initiated by different actors in the coffee value chain. In general, three VSS initiatives prevail in the market, some created by non-commercial private bodies, such as non-governmental organizations or industry organizations, other by commercial companies (or coalitions of firms), and other by producers. However, up to now there has been little agreement among scholars on the question of how the adoption of VSS has affected the upgrading opportunities of coffee growers and, in this way, increase their incomes and improved their livelihood and well-being.

[10] The triangular symbol of “Cafe de Colombia” represents the archetypal Colombian coffee grower. Juan Valdez and his faithful mule represent the characteristics of the humble farmer in the Andes mountains where Colombian coffee is grown (Reina et al. 2007).

[11] As will be explained in Chapter 5, the Colombian Coffee Growers Federation (FNC) has sought to organise and represent coffee producers, promote the efficient production of consistent good quality of coffee beans, support the internal and external coffee market, promote social development in coffee growing areas, and develop Colombia’s national coffee public policy.

Two VSS were chosen to answer the questions raised in section 3.1. The first one is the initiative created by the Fairtrade Labelling Organisations International - FLO, the earliest labelling scheme, most recognized and studied in the coffee sector, founded in 1988 under the Max Havelaar label. Fairtrade is third party independently monitored and certified as are the other three major collective coffee sustainable standards.[12]

The extensive literature review of the impact of Fairtrade suggested that producers have received both direct and indirect benefits of adopting this sustainable scheme. For example, studies have signalled that Fairtrade has provided a favourable economic opportunity for smallholder farming families, in particular during the coffee crisis at the beginning of the century (Raynolds 2009). However, more recent research, using rigorous impact studies, concluded that the involvement in Fairtrade lead to modest increases in farmer incomes and farm production methods. Comparison studies indicate that although there is greater productivity and better prices on farms producing coffee with the Fairtrade label, these differences were not large enough to generate a clear effect, in particular because producers could not sell all their harvest as certified and effectively receive a price premium (Fort and Ruben 2008, Beuchelt and Zeller 2011, Ruben and Fort 2012).

However, as Hoebink et al. (2014) have signalled, until now there are few rigorous impact studies that relies on balanced panel data involving at least two round of surveys to assess differences over time.

The second VSS selected is the initiative launched by the sustainable division of Nestlé, the so-called Nespresso and its Nespresso AAA Sustainable Quality Programme that was publicly introduced in 2005 in collaboration with the Rainforest Alliance. This initiative has incorporated a set of basic socio-economic and environmental standards with the main aim of improving livelihoods, along with complex coordination, quality requirements and parameters. Although Nespresso AAA is not a certification scheme as it is not third party certified, this initiative as such is exerting a greater influence on value chain structures and has reached dominant market positions in Colombia and other producing countries. This initiative now competes in the coffee market with certifications schemes created and settled by Alternative Trade Organisations, Non-Governmental Organisations and other kinds of civil society organisations as well as with those differentiation initiatives created by producers' programmes linked to authenticity of origin.

[12] The other three are the International Federation of Organic Agriculture Movements (IFOAM) – the coffee standard launched in 1995, the Rainforest Alliance (RA) – the coffee standard launched in 1995, and the recently emerged Utz Certified, and benchmarked to the GlobalGAP food safety certification programme since 2005.

In the particular case of the Nespresso AAA Sustainable Quality programme, there is not a systematic analysis of value chain available or studies about its effects on living conditions and farmers' livelihoods. Most of the information accessible has been published by Nestle-Nespresso at its web page with the exception of a couple of unpublished studies (INCAE 2011, CRECE 2013).

In Colombia, this scheme has had the fastest growth over the last ten years. Between 2006 and 2012, Nespresso AAA purchases increased by 260% and its share of the total coffee bought rose from 4.7% to 24.3%.[13] This extraordinary growth rate is partially explained by Nespresso's initial expansion from one geographical cluster in partnership with one supplier (Expocafé) and 5,000 coffee growers in 2005 to operating in three clusters, grouping 35,000 farmers and working with three suppliers—FNC, Expocafé and SKN Caribecafe (Nestlé-Nespresso 2012b).

3.4 Research methods

A mixed methods approach has been used in this thesis in order to test the research questions raised above. As such, both quantitative comparative and qualitative comparative research methods were employed. Primary data were gathered at farm level through three surveys for the same group of coffee producers with information taken from the harvest seasons of 2008, 2009 and 2011.

To address the question of what would have happened to a coffee grower without the participation in a particular VSS, impact evaluation methods were used. These techniques allow to infer if participation in VSS has facilitated producers´ upgrading strategies, and the extent to which it has brought economic benefits and reduced their exposure to risk and vulnerability in the specialty coffee value chain. The methods suggested by impact evaluation literature (Leeuw and Vaessen 2009, Khandker, Koolwal et al. 2010) are Randomized Control Trial (RCT), Instrumental Variable estimation, Regression Discontinuity, Propensity Score Matching, and Difference-in-Difference. All of which requires a counterfactual comparison group, as will be described in sections 3.5 and 3.6.

However, some of these techniques could not be estimated for the purpose of this research. Randomized Control Trial (RCT) could not be employed as the implementation design of the VSS in Colombia relied on farmer's decisions and institutional interest.

[13] This information was obtained using data from 10 cooperatives of coffee growers located in four different regions in Colombia (its acquisitions were around 2.1 million bags of 60 kg in 2006 and 1.6 million bags in 2012). These cooperatives buy nearly 50% of the coffee purchased by 35 cooperatives of coffee growers operating in Colombia. Therefore, this data is representative.

Similarly, in absence of a variable score that determines the participation in the VSS, the Regression Discontinuity could not be applied as an impact evaluation method in this thesis.

Conversely, the analytical approach of difference-in-difference (DID) could be applied given that the database used in this study corresponds to a longitudinal panel data with information of farmers enrolled in VSS and a group with no intervention (the control group) for the same time frame. Additionally, the power of the DID can be augmented by the Propensity Score Matching analysis (PSM) as this technique develops a statically counterfactual or control group that is as similar to the participation group as possible in terms of observed characteristics (Fort and Ruben 2008, Ruben and Fort 2012). In consequence, these analytical approaches have been employed to address the questions raised in this thesis (please see subsections 3.6.1 and 3.6.2).

It is important to mention that the assessment was developed in the context of a decreasing harvest between 2008 and 2012 (the lowest crops levels since the 1970s) and the highest farm gate prices in a decade, including a substantial price differential for the Colombian Milds against its main substitutes in the market (Other Milds and Natural Arabicas). Meanwhile, coffee authorities, with the support of the national government and several donors, took policy actions in order to help producers to recoup the output seen at the beginning of the century. These policies influenced both certified and control group farmers (see Chapter 5).

The survey information was complemented by a set of in-depth interviews with key stakeholders of the coffee chain in Colombia. Additionally, primary quantitative information was obtained from 10 cooperatives of coffee growers that provided the volume purchased (kg) and farm gate prices (COP/kg) for seven of the main voluntary sustainability standards, regional and conventional coffees between 2006 and 2012. The ShymphonyIRI Group (ShymphonyIRI Group 2013) provided the data for retail prices in different distribution channels for Fairtrade, conventional and regional coffee from Colombia in the United States. Retail prices for Nespresso were provided by the Nespresso Boutique in Selfridges - London (Nespresso Boutique Selfridges London 2013).

3.4.1. The survey data

The data set for this study comes from a broader research study developed in Colombia since 2008 by CRECE[14] in collaboration with COSA.[15] The CRECE-COSA project conducted a monitoring and evaluation study with data from the harvest seasons of 2008, 2009 and 2011 to compare changes in socioeconomic and environmental performance in seven voluntary sustainability standards of the coffee industry (Fairtrade, Organic, Rainforest Alliance, UTZ Certified, C.A.F.E. Practice, Nespresso AAA and 4C) and their respective control groups formed by conventional coffee farmers. Information was gathered in four coffee regions and five departments of Colombia (Caldas – Centre of Colombia, Cauca and Nariño – South-West, Huila – South Central, and Santander - North) directly from a sample of 3,372 coffee growers, from which 2,632 were treated producers and 740 producers were operating as a control.

The sampling frame was built from a list of more than 20,000 coffee farms for the initiatives of interest, obtained from the Coffee Information System of the Colombian Coffee Growers Federation. A probabilistic sampling process was carried out considering initiatives and regions as strata, confidence levels of 95% and errors of less than 7%. The regions in the sample represented more than 60% of the certified farmers in the country.

Sample selection for control groups was done in two steps. First, the Departmental Committees of Coffee Growers helped to identify sub-regions or municipalities in which the production systems were similar to those selling specialty coffees (treatment groups) - with comparable climate, geographical, and growing conditions, such as altitude, and similar infrastructure and distances to markets. These farmers were not willing to participate in certification initiatives, and their prospects towards certification

[14] The Centre for Regional Entrepreneurial and Coffee Studies (CRECE) is a non-profit organisation based in Colombia, with 26 years of experience in socio-economic research and consulting. Its work has been oriented to support decision-making processes for development by designing, collecting, processing and analysing good quality information. The main research topics in regional development are coffee and agricultural economics, social and institutional development and education studies. During the last decade, the Centre has been dedicated to the M&E of development programmes and measuring sustainability initiatives in the agricultural and coffee sector.

[15] The Committee on Sustainability Assessment (COSA) is a neutral global consortium whose mission is to accelerate sustainability in agriculture via partnerships and assessment tools that advance the understanding of the social, economic, and environmental impacts of voluntary sustainability standards in the coffee and cocoa sectors. COSA advises and works together with important institutions and world-leading companies to accelerate the use of sound metrics and the effective management of sustainability efforts. In Colombia, the study is funded by the Colombian Coffee Growers Federation (FNC), Nestlé - Nespresso S.A, USAID - ACDI / VOCA and CRECE. According to its promoters, the COSA project is working in twelve coffee and cocoa producing countries. It is part of the Sustainable Commodity Initiative (www.sustainablecommodities.org) which is a joint initiative managed by the International Institute for Sustainable Development (IISD) and the United Nations Conference on Trade and Development (UNCTAD), among other organisations.

were particularly low. However, they were comparable as they participate in the FNC programmes, receive training and technical assistance and their coffee is sold both as part of the "100% Colombian Coffee Program", as well as regional coffee and with the status of Protected Geographical Indication (PGI) in the European Union, Switzerland, Peru, Ecuador and Bolivia. As such, these different types of coffee effectively receive a price premium in the international market as Colombian Milds (see Figure 4.1 and 5.3).

Afterwards, the universe of farmers was restricted to having similar or average sized farms, the size of their coffee plantations and coffee specialisation (ration between coffee area and farm size) within the range of the treatments groups sample, and then a random sampling from this group was made.

The methodological perspective chosen corresponds to longitudinal research which includes a panel design for data gathering through a questionnaire that covers three surveys: a baseline study carried out from July 2009 to January 2010, intermediate monitoring carried out from November 2010 to March 2011, and an impact evaluation carried out from December 2011 to May 2012. The data collected corresponds to the previous year, the harvest seasons of 2008, 2009 and 2011 respectively, and it was obtained through structured household questionnaires to the same group of producers over three years in direct interviews at the farms.

However, COSA reports (Giovannucci and Potts 2008, COSA 2013) have some general limitations so far: (a) they have not compared any particular VSS or singled out a particular standard (Panhuysen and Pierrot 2014); (b) COSA reports do not give particular attention to those producers of conventional coffee which are the potential producers of value added coffees in the future and the gaps against certified producers; (c) COSA does not separate its analysis between the origins of standards, for example, between business certifications and third party sustainable initiatives; (d) although it mentions in its discourse the hurdles of small farmers to participate in the sustainability coffee value chain, COSA indicators do not take into account the farm size; (e) for most of cases, COSA does not consider net household incomes, including on/off farm activities to appreciate changes in the share of household income generated by coffee sales; and (f) most of the reports using data from COSA concentrate their economic analysis on the unit of production (UDS per kilogram) instead of on the unit of area (USD by farm or hectare) which impedes important welfare aspects as changes in expenditures patterns, and trends in use of labour and inputs, among others.

3.4.2 The database for this study

The database for this study is a subsample of the CRECE-COSA study, representative for Huila and Nariño departments. Three surveys covered data from the Fairtrade and Nespresso producers and their respective control groups for the harvest seasons of 2008, 2009 and 2011. As some producers made the decision to drop out of the certification programme during 2009 and 2011, a decision was made to eliminate these observations from the sample, therefore the sample covers the same number of producers over the three years. This decision avoids the potential problem of selective attrition and potential bias in the outcomes.

The first survey with data from 2008 covered 625 coffee producers: 170 farmers operated as a control group for Fairtrade and 218 farmers as a control group for Nespresso. For the certified group, 105 farmers were labelled as Nespresso AAA_1, and 157 certified as Fairtrade producers. The same sample of producers was surveyed to get data from the harvest seasons of 2009 and 2011. Additionally, during the second survey a new group of 202 farmers of Nespresso AAA were included in the sample (Nespresso AAA_2 hereafter) to be compared against the Nespresso AAA_1 in 2009 and 2011, see Table 3.1.

The main motivation to separately analyse two strands of Nespresso AAA producers' rests on the following reasoning: this is an opportunity to track and compare the impact on small producers of the strategic changes adopted by the Nespresso AAA Programme since its creation in one specific region (Nariño – Colombia). In this sense, this information could help us to learn about the internal trajectories of upgrading and farmers "learning curves" among actors operating within the same standard instead of just a certified vs. noncertified alternative. This will help to identify the factors that help to participate in specialty coffee value chains and those that do not.

Concerning the agrarian structure of the sample frame, farms were divided into three groups for further analysis: small farms under one hectare; medium size farms between one and five hectares; and large farms over five hectares. This classification is based on previous work by the author about the agrarian structure of the coffee sector in Colombia (García and Ramírez 2002, García 2003).

Overall, there are contrasting differences between treatment groups due to regional differences. For example, in the Nespresso AAA sample located in Nariño – South of Colombia, the agrarian structure is characterised by the predominance of small and medium-sized producers, both for the control group and the farmers labelled as AAA_1 and AAA_2 (97%; 94% and 88% respectively). Meanwhile, for the Fairtrade sample,

medium and large farmers were the largest share of the sample of both the control group and the Fairtrade farmers (90% and 92% respectively). Regarding Colombia´s size distribution of coffee farms, predominantly medium and small farms were 79% of the sample.

Table 3.1 Sample frame and agrarian structure before matching procedures

Initiative	Sample frame before PSM				Farm size (Ha.)	<1	≥1 and <5	≥5
		2008	2009	2011				
FairTrade	Fairtrade	132	132	132	Fairtrade	8%	58%	34%
	Control	170	170	170	Control	10%	51%	39%
Nespresso	AAA_1	105	105	105	AAA_1	45%	50%	6%
	Control	218	218	218	Control	55%	42%	2%
	AAA_2		202	202	AAA_2	21%	67%	12%
	AAA_1		105	105	Colombia	29%	50%	21%
Total		625	932	932				

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

3.4.3 The questionnaire

The questionnaire[16] format used for the field data collection gathered both quantitative and qualitative information to assess both the direct and indirect welfare effects at farm level of the adoption of different voluntary sustainability standards, compared to producers of conventional coffee. The survey design allowed the construction of a set of economic, social and environmental indicators and indices to carry out a cost/benefit analysis that would enable comparisons between producers of conventional and value added coffees to allow the hypothesis to be tested at a farm level.

The questionnaire has four sections including basic information and measures along with economic, environmental and social parameters: (i) Section one asks about the characteristics of the farmer and the farm; (ii) Section two inquiries about the economic dimension of the farm household, which contains information regarding production costs, farm assets, market access, credit access, premiums, and income from coffee, among others. (iii) Section three is focused on the social dimension, and asks for household composition, household assets, education, training, medical care and workers' conditions; and (iv) Section four deals with the environmental outcomes of sustainable initiatives. This final section was designed to measure farms' environmental status and performance including measures of the use and management of water,

[16] Appendix 1 provides a full overview of the survey questionnaire.

energy and soil resource, as well as pollution reduction, recycling, carbon sequestration, the application of agrochemicals and fertilisers and the adoption of environmental-friendly practices.

The questionnaire gathers information about who controls the initiatives in which the farmers are engaged, their reasons to be involved in these initiatives, their cost incurred during the inspections, audits, transactions and getting the certification, their expectations or difficulties in the certification process, their main reasons to get the certification, or their expectations, difficulties and perceptions about sustainable initiatives. In addition to these standard measures, the survey tried to detect other behavioural responses such as the changes in attitudes regarding risk, willingness to invest, strength and bargaining power of farmers and their organisations.

3.5 Producers' comparison by initiatives

Table 3.2 shows the basic characteristics and pre-treatment variables for Fairtrade, the two strands of Nespresso producers and their respective control group during the harvest seasons of 2008, 2009 and 2011 respectively. Overall, the household characteristics between certified and conventional producers are comparable, though the analysis reveals some statistically significant differences for some key variables before the matching procedures that could account for differences in income and profits.

In this sense, the comparison of the age of the producers and years of experience in the business reveals that coffee producing households are headed by men in their late forties and fifties, who have between 25 and 35 years of experience producing and trading coffee. The majority of producers barely finished primary school, the mean for years of schooling approved for those producers who sell certified coffee was 4.8 years compared to 3.6 years in the control group. Due to the initiatives, the general certified producers have statistically significant higher levels of schooling than their respective control group. Without any doubt, this lower level of education is a very complex situation for standards' setters with a view to increasing the competitiveness of the coffee producers, in particular, if they do not invest in alphabetisation among those producers who need access to literacy.

The survey also revealed that, on average, in the three surveys, 60% to 70% of the family's worked in coffee activities. Data revealed that there was a trend to reduce the proportion of the family members who are self-employed in coffee activities both among certified producers and their respective control groups. Notwithstanding, there

was a significantly lower share of family labour for those certified producers working on the farm compared with their respective control group.

On average, among the farmers surveyed, coffee producers have a large economic dependency on income generated from coffee, as there is almost no access to non-farm rural employment and other types of income coming from agricultural activities.[17] In particular, the study found that certified producers had a statistically and significantly higher proportion of family income generated from coffee earnings compared to the control group selling to the conventional market. On average, the survey revealed that around 70% of the household earnings of certified farmers came from coffee compared to around 60% of producers operating as a control. In terms of trends, as will be shown below in chapter 7, while Fairtrade producers increased the proportion of family income generated from coffee, for both groups of Nespresso producers this proportion decreased, see Table 3.2.

Interestingly, the study found statistically significant evidence in producers' efforts to branch out into other cash crops to reduce their dependency on coffee earnings. The study indicated that Fairtrade farmers' have statistically significant lower levels of crop diversification with cash crops compared to the control group. In contrast, the Nespresso producers presented higher levels of diversification with cash crops than their respective counterpart selling to the conventional market.

Referring to the coffee growers' efforts to produce food staples to improve food consumption at the household level and increase their levels of food security, evidence revealed that among 90% and 95% of both certified and control farmers indicated that they produced food staples to improve food consumption in the households and increase their levels of food security.

Concerning the average size of the farms and the coffee plots, there were some differences among certifications. While there were statistical significant differences among those farmers affiliated to Nespresso and their respective control groups, the test did not find significant differences between Fairtrade and conventional producers.

[17] Substitution effects were not considered as the amount of income from activities other than coffee production (cash crops, cattle and non-farm income) was not included in the survey.

Table 3.2 Characteristics of coffee producers by group

	2008			2008			2009		
	AAA_1	Ctrl	P-value	Fairtrade	Ctrl	P-value	AAA_2	AAA_1	P-value
Household characteristics									
Ages head of household (mean)	51.8	49.0	0.118	44.2	48.0	0.008 ***	52.0	53.3	0.521
Producers´ experience (years)	30.7	28.3	0.087 *	25.3	25.6	0.942	31.3	25.6	0.000 ***
Education head of household (years approbed)	4.3	3.7	0.138	5.3	3.8	0.000 ***	5.6	3.8	0.000 ***
% of family labor in coffee activities	71%	73%	0.353	78%	74%	0.183	59%	50%	0.004 ***
Family size	4.3	4.2	0.372	4.6	4.5	0.170	4.3	4.3	0.970
Income characteristics									
% of family income coming from coffee	70.5%	60.1%	0.007 ***	83%	74%	0.002 ***	71%	66%	0.045 **
% of farms with cash crops	41.9%	24.3%	0.001 ***	32%	62%	0.000 ***	84%	91%	0.110
% of farms with food crops	94.3%	92.7%	0.588	99%	95%	0.083 *	99%	99%	0.703
Land characteristics									
Farm size (ha.)	1.5	1.5	0.070 *	4.6	5.6	0.418	2.7	1.8	0.000 ***
Coffee area (ha)	0.9	0.7	0.012 **	2.1	2.3	0.860	1.9	1.1	0.000 ***
% of the farm area planted in coffee	77%	74%	0.382	65%	62%	0.641	83%	80%	0.341
Trees per Ha.	5,580	5,476	0.489	5,463	5,112	0.136	5,217	5,340	0.217
Average age of the trees	5.0	5.2	0.808	3.9	4.2	0.798	4.9	4.8	0.482
Sythetic Fertilizers applied (kg/ha)	839	641	0.097 *	1,083.3	838.7	0.000 ***	956	957	0.862
Yield of parchment coffee (@/ha)[§]	90.7	58.9	0.000 ***	104.7	78.2	0.000 ***	102.4	93.4	0.129
Accessibility									
Time from farm to coffee point of sale (minutes)	30.8	41.0	0.000 ***	52.9	53.1	0.538	22.0	29.7	0.092 *

*** p< 0,01; ** p< 0,05; * p<0,1

[§] @=12.5 kg

Source: Author's own calculations based on CRECE's surveys with data from 2008 and 2009

Among those producers labelled as Nespresso AAA_1, farms were of around 1.6 hectares with coffee plots of around 1.0 hectares, compared to areas of 1.4 and 0.8 hectares for conventional producers respectively. Surprisingly, the test revealed that AAA_2 farmers have farms and coffee plots significantly larger than AAA_1 farmers. Regarding Fairtrade producers, farm areas were around 4.9 ha with coffee plots of around 2.3 ha.

Were considered a set of variables that reflect the characteristics of the coffee plot and the adoption of good agricultural practices: (i) the ratio between coffee-growing area and farm size (specialisation rate); (ii) number of trees per hectare; (iii) the average age of the trees; (iv) the amount of chemical fertilisers applied to the soil yearly; and (v) the yield of coffee per hectare harvested yearly.

Concerning the rate of specialisation, two important facts should be highlighted. Firstly, higher rates of specialisation among certified and conventional producers reinforce a higher dependence on coffee earnings. Secondly, it seems that the higher specialisation is not a result of participation in certification programmes. Similarly, there were not differences among certified and conventional producers regarding the number of trees per hectare and the average age of the trees. In this sense, as will be explained below in Chapter 5, the role of the institutional support to help farmers to renovate their coffee trees has benefited both certified and non-certified producers.

Finally, regarding the amount of chemical fertilisers applied to the soil during the harvest season of 2008, and the yield of coffee per hectare, the study found statistically significant evidence favouring certified producers. As such, certified producers, compared to control producers, not only applied significantly higher levels of fertilisation but also obtained significantly higher levels of coffee per hectare.

3.6 Analytical/Assessment approach

In order to construct statistical comparison groups or credible counterfactual, it is important to address self-selection bias as much as possible, and mitigate the impact of independent factors that may have affected many of the observed changes, therefore two steps were taken: (i) a “with and without” assessment by implementing a Propensity Score Matching (PSM) for a selected group of variables with data from the harvest seasons of 2008, 2009 and 2011, and (ii) a “before and after” analysis employing a Difference in Differences (DID) analysis. It accounts for the differences between the years for both certified and control producers as well as the differences within the years between the certified and controls. This procedure looks to resolve one of the fundamental problems of the impact evaluation, which is to observe what would have

happened to a coffee grower without the participation in a particular scheme or intervention (White and Bamberber 2008, Leeuw and Vaessen 2009).

Long-term impact assessments during the several harvest seasons is an important way to overcome the selection bias (Crosse, Newsom et al. 2012, Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012). On the one hand, this allows an opportunity to measure the effects at a socioeconomic and environmental level after the adoption of the set of good agricultural practices instead of the mere compliance of task and requirements (ISEAL 2010, Alvarez and Von Hagen 2011). On the other hand, this helps to articulate a theory of change, the desired impacts, and tuning the performance indicators needed to monitor the effectiveness of the certification (Lebel 2012, Newsom, Kennedy et al. 2012).

3.6.1 Propensity Score Matching (PSM) Method to address selection bias

The PSM tries to replicate a controlled experiment by identifying a matched group of uncertified farmers (control farmers or counterfactual) that are very similar to the farmers participating in the VSS in all relevant pre-treatment characteristics (in term of observable characteristics) (Fort and Ruben 2008, Ruben and Zuñiga 2011, Ruben and Fort 2012). If this goal is accomplished, then differences in outcomes after the treatment between the control group and those farmers participating in the voluntary sustainability standards can be attributed to their participation in one particular programme.

The main goal is to measure the programme´s impact as the average treatment effect on the treated (ATT), which refers to the average effect of the affiliation to Nespresso and Fairtrade certifications on the performance of farm level indicators dealing with factors facilitating participation in the programme, and livelihood-related variables that could be affected by the dynamics of participation, added to indicators related to coffee production, prices and revenues.

However, in order to attribute changes in outcomes and impacts directly to those activities or interventions associated with VSS per se, it is necessary to construct a credible counterfactual that is very similar to the certified producer in terms of observable characteristics. It is necessary to control this statistically for a potential source of bias, including sampling, spill-over and selection bias (Leeuw and Vaessen 2009, Blackman and Naranjo 2010, Bennet, Francesconi et al. 2012, Crosse, Newsom et al. 2012). A straight comparison between farms participating in the VSS and non-participating farms may introduce the risk of a selection bias, since these types of individuals may differ even in the absence of the institutional intervention.

For example, evidence from several field interviews and data from the workshops carried out during fieldwork suggests that the more advanced producers, in terms of training and GAP adoption, were initially selected to participate in the certification programmes. The selection strategy adopted by producers' organisations and VSS initiatives was focused on involving those participants with potential to adopt the practices early on and consequently achieve better results. These differential criteria meant that high yielding, larger, more trained and capable farmers were on average chosen. These contextual factors may have caused a selection bias, in addition to the long-term development interventions of the FNC among certified and non-certified producers, who were more likely to have influenced the intended outcomes and impacts (i.e., sustainability objectives) of the VSS. In contrast to the previous situation, there is also the case that a particular programme (i.e. Nespresso AAA) chooses those farmers who were concentrated on specific geographical zones where the coffee profile meets specific quality requirements needed for its blends, while their socio-economic situation and the agronomic characteristics of the farm do not matter.

The possibility of doing PSM relies on having a rich dataset able to support the Conditional Independence Assumption (CIA), which means that differences in outcomes between farms with the same pre-treatment characteristics are caused by the treatment. Taking into account the CIA should do the selection of variables for the construction of the propensity score. Therefore only exogenous variables that are non-affected by the engagement within a particular voluntary sustainability standard and that simultaneously influence the participation decision should be included in the model (Fort and Ruben 2008, Leeuw and Vaessen 2009, Khandker, Koolwal et al. 2010, Ruben and Zuñiga 2011).

3.6.1.1 Probit model, matching certified and conventional producers

For the purpose of controlling the selection effects, a Probit model was developed to estimate the propensity score or predicted probability of participating in a voluntary sustainability standard of each farm in the complete sample. The propensity score, to construct the control group with average characteristics similar to those of the treatment, was estimated by using the PSMATCH2 STATA command, implementing a Probit regression for a set of 10 pre-treatment variables influencing the likelihood of certification. Three vectors of variables were considered: (i) the characteristics of the household; (ii) location data; and (iii) the characteristics of the land used for agriculture.

The first vector is defined as H_i in the equation (1). It includes variables such as the farmers´ age, average year of education in the family, average family size, years of experience in coffee production, gender, family size and average number of children per family. The second vector is defined as Loc_i in the equation (1). It includes the distance

from the farm to the market. The third vector considered the characteristics of the farm, and is defined in the equation (1) as C_i including the coffee area, average age of the coffee trees, and the farm size.

The estimated model is presented in equation (1)

$$P(X) = \Pr(T = 1 | H_i \, Loc_i \, C_i) \quad (1)$$

Equation 1 means that the probability of participating in a particular voluntary sustainability standard, and in this case Nespresso and Fairtrade is conditional on some variables.

The probability model was estimated for the baseline year of 2008, the year in which these initiatives were implemented in the departments of Nariño and Huila. It was considered that this decision was the best alternative to estimate the propensity score, as estimating a propensity score for 2009 and 2011 could include the effects of certifications. This method permits constructing a matched control sample of uncertified or non-certified farms that are very similar to the certified farms in terms of the 10 pre-treatment variables outlined above.

Table 3.3 presents the results from the Probit regression used to generate propensity scores. The probability model for AAA_1 producers and conventional producers revealed significant differences in the size of the coffee plot, the gender of the farmer, the natural logarithm of the distance of the farm to the market, the number of kids in the household and the family´s average years of education. This latter effect was maintained for Fairtrade producers which has also shown a significant difference in terms of the farmer experience in coffee cultivation and age of the coffee farmer. These latter two effects were maintained for AAA_2 farmers that also showed effects in the size of their coffee plot and the family´s years of education.

This model presents an overall explanatory power (according to the Psedo R^2 reported) of around 14% for the comparison of AAA_1 with conventional producers, 6% for the comparison of Fairtrade and conventional producers, and 16% for the sample of AAA_2 and AAA_1.

Table 3.3 Factors influencing the likelihood of participation - Probit analysis for Nespresso AAA_1, Fairtrade and Nespresso AAA_2

Probit	AAA_1	Fairtrade	AAA_2
Farmer Age	0.00216	-0.0120***	-0.0113***
	(0.00290)[§]	(0.00385)	(0.00304)
Farmer experience in coffee	-0.000586	0.00936***	0.0119***
	(0.00253)	(0.00361)	(0.00269)
Coffee land area	0.139**	-0.0142	0.128**
	(0.0689)	(0.0237)	(0.0503)
Average coffee tree age	-0.00694	0.00169	0.00203
	(0.00814)	(0.0135)	(0.00833)
Family Size	0.0344	-0.00731	0.00837
	(0.0210)	(0.0281)	(0.0213)
Farmer gender	0.281***	-0.0763	0.0874
	(0.0517)	(0.0919)	(0.0738)
LN distance from market (Time)	-0.130***	0.0278	-0.0691
	(0.0397)	(0.0427)	(0.0434)
LN Farm size	-0.0314	-0.0147	-0.0150
	(0.0451)	(0.0390)	(0.0578)
Family average education years	0.0208*	0.0359***	0.0275**
	(0.0123)	(0.0132)	(0.0111)
Number of kids in the household	-0.0663**	0.0415	-0.0219
	(0.0321)	(0.0381)	(0.0358)
Observations	316	290	307
LR chi2(10)	55.63	25.3	65.5
Prob > chi2	0.0000	0.0048	0.0000
Pseudo R2	0.1400	0.0634	0.1661

[§]Estandar errors in parentheses

*** p< 0,01; ** p< 0,05; * p<0,1

Source: Author's own calculations based on CRECE's surveys with data from 2008

3.6.1.2 Calculation of the propensity score (Pscore) and selection from the common support area

Based on the results of the regressions obtained from the survey with data from the harvest season of 2008, the propensity score was estimated (the predicted probability of having a certification - AAA_1, Fairtrade, and AAA_2) to match the certified and conventional coffee producers on the basis of the propensity score to identify the regions of common support, defined as the values of propensity scores where both certified and conventional producers are found.

For each one of the certifications, the regions of common support were set up after eliminating some observations in the group of conventional producers with a p-score lower than the minimum p-score in the certified group, and eliminating the observations in the group of certified producers with a p-score higher than the maximum p-score in the conventional group of producers (Fort and Ruben 2008, Ruben and Zuñiga 2011, Bennet, Francesconi et al. 2012, Ruben and Fort 2012). This method ensures maximum comparability between certified and non-certified farms as the sample used for matching in the PSM model and is restricted to the common support region, defined as the values of propensity scores where both certified and conventional producers are found. Table 3.4 presents the value of the regions of common support for the two strands of Nespresso and Fairtrade.

Table 3.4 Regions of common support

	Lower bound	Upper bound
AAA_1	0.047	0.865
Fairtrade	0.164	0.828
AAA_2	0.126	1.000

Source: Author's own calculations based on CRECE's surveys with data from 2008

3.6.1.3 Matching participants and nonparticipants

If Conditional Independence Assumption (CIA) holds, the PSM for the average treatment effect on the treated (ATT) can be specified as is presented in equation 2:

$$ATT = \frac{1}{N}\left[\sum_i Y_i^T - \sum_j w(ij) Y_j^C\right] \qquad (2)$$

where N is the number of participants *I*, ω(*I, j*) is the weight used to aggregate the outcomes for the matched controls producers *j*, and Y_i^T represents the potential outcomes for certified producers.

The matching estimators contrast the outcome of each certified farms with the outcomes of each control farm based on propensity scores, and this process can be done through different matching algorithms with some consequences in the results of the treatment effect (Leeuw and Vaessen 2009, Khandker, Koolwal et al. 2010). These matching algorithms differ not only in the way the neighbourhood for each treated individual is defined but also with respect to the weights assigned to these neighbours (Fort and Ruben 2008).

In general, the various options introduced a trade-off between different degrees of the bias and the variance obtained in the results (Caliendo and Kopeing 2005). For example,

an option can be chosen that increases the number of counterfactuals for each treated unit, thereby reducing the variance and increasing the precision of the estimates. However, this option may increase the bias by the use of less accurate matches.

For the analysis of the effects both at farm level and key livelihood related variables, four different matching algorithms were tested to assure the robustness of the results to the method applied:

i. Kernel matching, a non-parametric matching estimator that uses weighted averages of all farms in the control group to construct the counterfactual outcome.
ii. Nearest neighbour (one-to-one) matching that chooses for each certified farm the observation in the control group that is closest in terms of propensity score;
iii. Three nearest neighbours, which uses the weighted average of the three closest neighbours.
iv. Caliper or radios matching tries to resolve very high differences in the propensity scores between certified and control producers. This procedure therefore involves matching within a certain range and a higher number of dropped nonparticipants is likely, potentially increasing the chance of sampling bias (Khandker, Koolwal et al. 2010).

For the analysis of the main findings of this thesis the decision was to use the results from the kernel matching. Nonparametrics matching methods such as kernel matching use a weighted average of all control farmers to construct the counterfactual match for each certified farmer. This is a very important fact if the sample size is small (the certified group labelled as Nespresso AAA_1 in particular) as one risk with the methods just described is that a small subset of control producers will ultimately satisfy the criteria to fall within the common support and thus construct the counterfactual outcome (Khandker, Koolwal et al. 2010). The weights for kernel matching are given by equation 3:

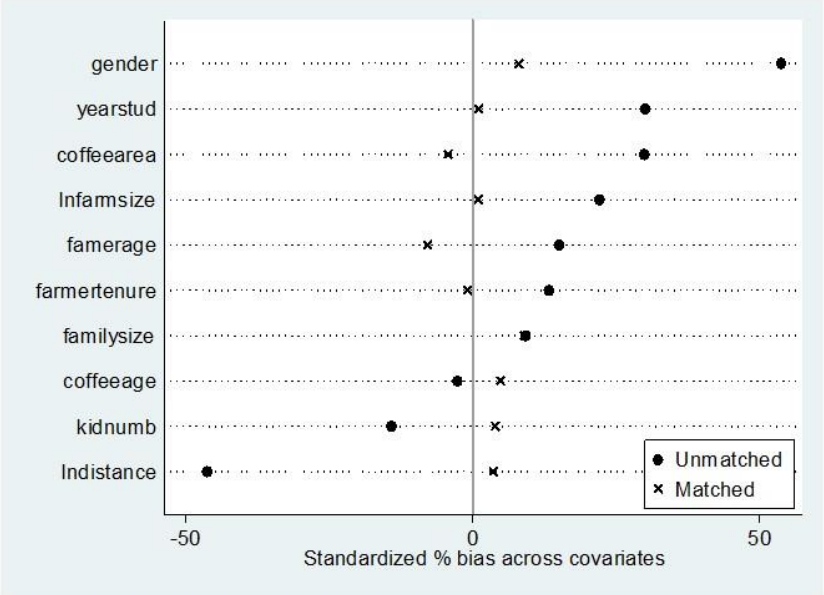
$$w(i,j) = \frac{K\left(\frac{P_j - P_i}{a_n}\right)}{\sum_{k \epsilon C}\left(\frac{P_k - P_i}{a_n}\right)} \qquad (3)$$

where $K(\cdot)$ is a kernel function and a_n is a bandwidth parameter, P_j is the propensity score estimated for the group of control producers, P_i is the propensity score for the certified producers.

Figures 3.1; 3.2; and 3.3 show how the matching methods such as Kernel matching reduce the estimated bias significantly. A similar exercise was carried out with Nearest Neighbour matching and Caliper matching, but the estimated bias diminished at a lower magnitude. For each one of the certifications, Figures show the changes in the behaviour

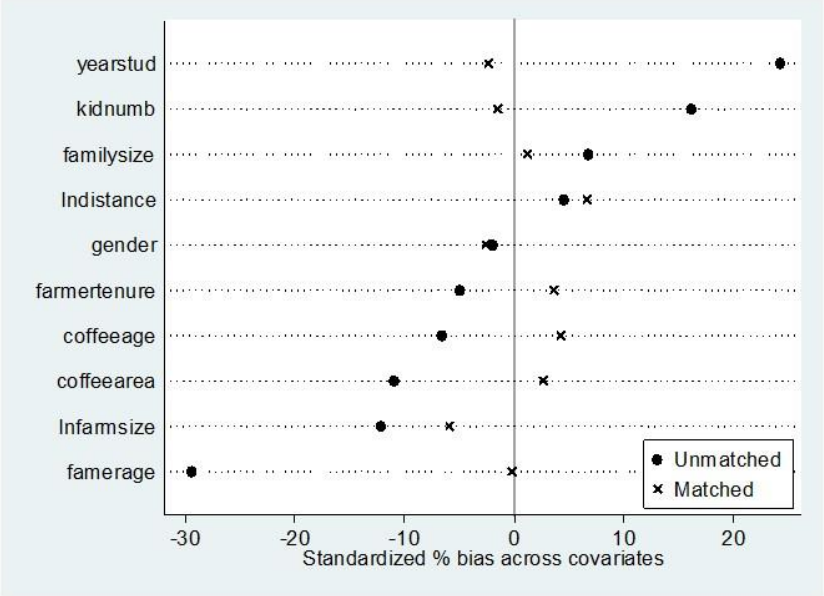
of the set of 10 pre-treatment variables influencing the likelihood of certification before and after the matching procedure employing kernel marching. After the matching there was a massive reduction from bias distribution across covariates. Therefore, a bias percentage closer to zero after matching is a better scenario for statistically analysis of impact variables.

Figure 3.1 Bias distribution before and after kernel matching selection for AAA_1



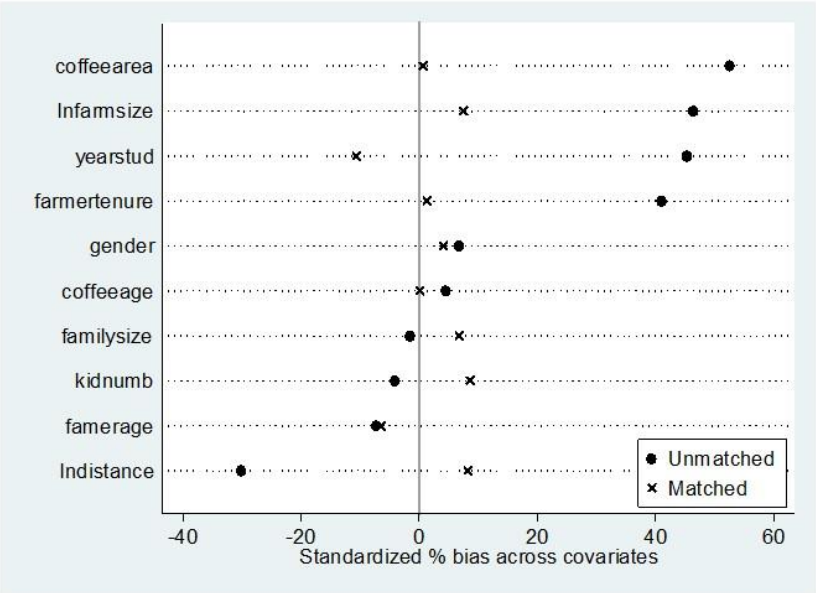
Source: Author's own calculations based on CRECE's survey from 2008

Figure 3.2 Bias distribution before and after kernel matching selection for Fairtrade



Source: Author's own calculations based on CRECE's survey from 2008

Figure 3.3 Bias distribution before and after kernel matching selection for AAA_2



Source: Author's own calculations based on CRECE's survey from 2008

3.6.1.4 Final sample after PSM with kernel

Next, the matching estimation was performed only on common-support observations for each one of the certifications and its respective control groups for the three harvest seasons evaluated in this study. The Table 3.5 presents the final distribution of the sample after the matching procedures. The sample frame lost 44, 60 and 60 farmers during the surveys in 2009, 2010 and 2012 respectively. From Fairtrade, the Kernel procedure dropped five producers from the treated group (4%) and 18 from the control group (11%). Meanwhile, from Nespresso AAA_1, the Kernel procedure dropped eight producers from the control group (4%), and 13 from the treated group (12%). Finally, for the Nespresso AAA_2, the Kernel procedure dropped 13 producers from the treated group (6%) and 3 from the control group (3%).

Only variables that were significant in explaining the propensity of being part of the certification and that could meet the relevant criteria to perform good matching quality were taken into account. Appendix 2, 3 and 4 present the outcomes of the Kernel procedure.

Table 3.5 Sample frame and agrarian structure after the PSM

Initiative		Sample frame after PSM			Farm size (Ha.)	<1	≥1 and <5	≥5
		2008	2009	2011				
FairTrade	Fairtrade	127	127	127	Control	8%	65%	28%
	Control	152	152	152	FT	10%	48%	42%
Nespresso AAA	AAA_1	92	92	92	AAA_1	42%	51%	7%
	Control	210	210	210	Control	57%	40%	3%
	AAA_2		189	189	AAA_2	26%	63%	10%
	AAA_1		102	102	AAA_1	38%	54%	8%
Total		581	872	872	Colombia	29%	50%	21%

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

3.6.2 Difference-in-difference or double difference

The main purpose of the analytical approach called double-difference (DD) or difference-in-difference (DID) is to solve the potential bias that results from the omission of non-observed differences that the PSM technique does not necessarily solve (Leeuw and Vaessen 2009). The DID approach compares the results before and after de involvement in the certification with the change in the control group for the same timeframe (Leeuw and Vaessen 2009, Khandker, Koolwal et al. 2010). Furthermore, the analysis allows to conclude that the changes are due to the intervention of the VSS (Bennet, Giovannucci et al. 2013).

The DID method consist in a panel regression model with at least a baseline and a follow up, in which the number of observations are bigger than the number of periods, three years in this case: the harvest seasons of 2008, 2009, and 2011. Following Khandker et al. 2010, the equation 1 specified what the DID procedure represents in econometric terms. Y_{ij} is each of the expected impacts, even outcomes, X_{it} is a vector of controlling variables, T_{it} is a dichotomous variable reflecting treatment, t is a binary representation of the time, and $(T * t)$ is a combination of treatment and time. Therefore, its estimated coefficient represents the DID effect of either Nespresso or Fairtrade. Finally, u_{ij} is unobserved heterogeneity.

$$Y_{ij} = \beta_0 + \beta_1 X_{it} + \beta_2 T_{it} + \delta_1 t + \delta_2 (T * t) + u_{it} \qquad [1]$$

Although the estimation of all the parameters is important, the main focus relies on the estimation of δ_2, because it shows the 'treatment' effect. Therefore, the main interest relies in knew its size, and whether it is statistically significant or not.

One advantage of DID as a panel data regression is that because of N dimension is larger than time dimension, we could run a fixed effects model, meaning that regressors are allowed to be endogenous because they are correlated only with a time invariant component of the error, and model error is assumed to be independent over individuals. Consequently, that correlation that is invariant can be dropped by fixed effect.

Knowing that PSM previously have had solve for observable differences between treatment and control groups, DID solve non-observable time invariant differences between treatment and control groups; letting us with a pure effect of the Nespresso and Fairtrade interventions.

In order to be sure about panel regression procedure employed for the DID analysis, it was performed a sensibility analysis of estimations. For the sake, there were estimated several auxiliary regressions of panel data by replacing the treatment variable with a random generated dichotomous variable instead. As a result of not statistical significance in those auxiliary regressions it was concluded that initial δ_2 unbiased represents time effects of certifications on every Y_ij variable defined.

Given that, in the data base there were available an intermediate follow up, DID estimation were run as follows in equation 2:

$$Y_{ij} = \beta_0 + \beta_1 X_{it} + \beta_2 T_{it} + \delta_1 t_3 + \delta_2 (T * t_3) + \delta_3 t_2 + \delta_4 (T * t_2) + u_{it} [2]$$

First of all, is a vector of farmer's characteristics such as: kids in the household, family members, average family years, education, farmer's age, farmer's gender, and farmer's work experience in coffee production. Also this vector contains variables of the farm area and location: log Nat Distance from sale market, average age coffee trees, farm land size, coffee area in the farm, coffee specialization area, and trees per hectare. These variables were included mainly to control the regression estimations.

Secondly, several δ_k parameters were included in order to capture into the model the time effect of the three years available in the data set. Just for notation it was used t_3 to express the final year or evaluation; while t_2 represents the intermediate year or follow up. Then, δ_2 still represents the DID estimator or impact estimator. Finally, the analysis in chapters 6 and 7 relies on δ_2 value for each of the factors were thought to have an impact or an effect caused by Nespresso or Fairtrade.

3.7 Operationalisation of key concepts

This section is divided into two sub-sections to discuss how this thesis operationalised the two key questions set out in section 3.1. The first focuses on understanding if the

dynamics of participation in the specialty coffee value chain have facilitated farmers' upgrading strategies. There is little agreement on the question of how the participation in the specialty coffee value chain has affected the upgrading strategies of agricultural producers in developing countries, small coffee producers in particular.

The second focuses on elucidating whether farmers participating in specialty coffee value chains not only benefit from increased income and profitability, and a higher share of the revenues from the value chains in which they participate, but also improve their welfare and livelihood. Recent contributions in value chain studies have suggested that the assessment of the implications of any upgrading strategy should focus on the full range of risks and/or rewards that participation in these chains provides to small and vulnerable producers.

This study contributes to the recent theoretical debates regarding the impact of VSS on the upgrading strategies of coffee growers and its potential to provide a different sustainable development approach for rural regions.

3.7.1 How participation in voluntary sustainability standards has affected the upgrading strategies of producers in the specialty coffee value chain?

On the basis of the extensive research detailed in Chapter 2, and the findings of two periods of fieldwork in Colombia, a model is proposed with two main development areas or principles that are determinants for producers to build their competences on, and to upgrade and participate in the specialty coffee value chain: (i) institutional arrangements to facilitate farmers´ upgrading efforts; and (ii) investments and adoption of good agricultural practices (GAP) needed for improving upgrading trajectories.

The first area of development tests a group of seven key indicators from two criteria. Its performance could facilitate or hinder upgrading strategies for those farmers participating in the specialty coffee value chain governed by two VSS. As has been mentioned in the thesis, small producers face deeper constraints and restrictions that limits their capacity to innovate in different spheres of upgrading. Therefore, institutional structures and local organisations play a role in supporting farmers' upgrading strategies in order to help them to participate competitively in the specialty coffee value chain.

The second area of development contains a catalogue of eight indicators from four criteria. For producers to be competitive and have market access, they have to achieve product, process, and volume (yield) upgrading. Investments are needed to supply good quality coffee in a consistent way, and increase land productivity which assures lower unit production cost – and increases value and volume. If producers cannot achieve at

least the basic quality requirements imposed by buyers, they risk being excluded from high-value markets.

For the purposes of the study, two groups of producers were analysed: (a) the first group considered the farm as the basic unit of analysis to compare the statistical differences in the means between certified and control coffee producers; and (b) the second carried out an analysis of the statistical differences between certified farms above five hectares compared to certified and control farms below one hectare.[18]

The selection of the base indicators, both discrete and continuous variables, was based on a process of iteration which excluded redundant variables and those that generated correlation problems between the selected indicators, and then included those capable of being tested.

3.7.1.1 Institutional arrangements to facilitate upgrading strategies

The literature highlights that the potential upgrading strategies in agri-food chains provided by VSS is marked by severe constraints at farm level that limited farmers ability to participate competitively in these chains (Bamber and Fernández-Stark 2014). In particular, small and less advanced producers whose competitiveness bottlenecks could contribute to their further marginalization and exclusion (Potts, Opitz et al. 2007, Jaffee, Henson et al. 2011, Lee, Gereffi et al. 2012, Ruben 2014). Constraints for implementing upgrading strategies include, inter alia, lack of appropriate managerial skills, limited access to capital and finance to invest for completing the process associated with standard compliance, infrastructural barriers, lack of economic incentives, and institutional weaknesses.

In order to overcome these limitations and comply with the increasing number of functions and stricter performance requirements imposed by VSS, local institutions, the public and the private sector should play a key role supporting the most vulnerable producers by leveraging resources to provide training and assistance services needed to help them to close the gaps quickly and upgrade (Humphrey and Schmitz 2001, Giovannucci and Purcell 2008, Humphrey 2008, Henson, Jaffee et al. 2009). As it is mentioned throughout the thesis, there is some understanding among stakeholders about the fact that small farmers involvement in modern agri-food chains must be supported by a synergy between public and private efforts to improve small farmers' ability to meet standards' and facilitate the investments needed to implement their upgrading strategies (Humphrey and Schmitz 2001, Jaffee and Henson 2005, Humphrey 2008, Henson, Jaffee et al. 2009, Auld 2010, Bolwig, Ponte et al. 2010).

[18] Due the fact that the sample of Nespresso AA to AAA coffee producers above five hectares was too short, the comparisons were based on those farms between one and five hectares.

Based on this discussion, two main criteria have been taken into account as they are key to assist producers in their attempt to reach process, product and volume upgrading. The principles and criteria for selection are as follow (also outlined in Table 3.6 below):

a) Facilitate access to credit and compensate the costs related to certification, inspection, paperwork, and the conversion process. Producers need to finance several types of direct and indirect costs associated with standards' compliance and meeting certifications' requirements. Although in most cases the cost of certification and the annual audits are afforded by export companies, cooperatives (if producers sell their production afterwards), NGOs and aid agencies, producers need to cope not only with the transition cost, the star-up cost and those expenses incurred in order to keep the status of certified within one or another programme, but also the recurrent and non-recurrent cost of compliance. This criterion includes three main indicators: (i) the percentage of producers that received credit during the surveys capturing data from 2008, 2009 and 2011; (ii) the level of subsidies and/or cash transfers; and (iii) aid in kind, received by each farmer in the surveys with data from 2009 and 2011.[19]

b) Provide free-of-cost services such as training and technical extension services in different areas of coffee production and processing, to help farmers not only to acquire knowledge about standards and certifications but also to reach its competitive requirements. This implies a clear role for institutions to support the processes of capacity building. The indicators for this criterion are: (i) the average hours of training received in Good Agricultural Practices (GAP)[20] by each farmer in the one year surveys of 2008, 2009 and 2011; (ii) the proportion of total producers who were trained to improve the quality of coffee; (iii) the proportion of producers who participated in coffee tasting trials (coffee cupping) in order to become familiar with the organoleptic properties or defects of the coffee produced on their farms; and (iv) the proportion of producers who received technical recommendations or assistance to fertilise the coffee trees.

[19] Questions about these issues were included just after the survey of 2009 following a request by the author of this thesis.

[20] Concerning the training topics' distribution, on average in the three surveys, around one third to one fifth of the time per year dedicated to training was dedicated to farm management practices and environmental topics respectively, while almost no time was designated to literacy programmes, around 2% or the total time per year. Time dedicated to traceability and commercialisation issues reached around one third of the whole training time, both for noncertified and certified producers. Meanwhile, training on certification topics covered around 15% of the treated producers and around 6% of noncertified producers.

3.7.1.2 Investments and adoption of good agricultural practices needed for improving upgrading trajectories

At farm level, adopting the competitive requirements of VSS entails improving farming techniques, making significant investments in proper post-harvesting processing facilities such as buildings and physical equipment, and covering the cost of the conversion process and the adjustment of the production systems. For example, attempting the process of upgrading to improve coffee quality, demands investing in better milling and drying infrastructure. Added to this, producers have to acquire knowledge about standards and certifications, as well as receive the training and assistance to gain the skills for adopting new production techniques needed to make use of physical equipment and to adjust to the production systems and production facilities.

As will be shown in Chapter 5 and described in Section 3.3 of this chapter, one of the main bottlenecks for coffee growers to connect to high value markets refers to the lack of infrastructure to process the coffee.

Based on this discussion, four main criteria key to assisting producers in their attempt to reach process, product and volume upgrading have been taken into account that are. The principles and criteria for the selection are outlined in Table 3.3 below:

a) Guarantee the availability of post-harvest infrastructure to assure process upgrading and the supply of dry parchment with the very high quality standards required by buyers to participate in the specialty coffee value chain. This criterion includes three main indicators tested during the surveys of 2008, 2009 and 2011: (i) the proportion of coffee producers who have a milling (de-pulping) machine at the farm; (ii) the proportion of producers who have adequate sun-drying infrastructure at farm level; and (iii) the proportion of the harvest sold of dry parchment coffee offered at the market. These variables are closely associated to the changes or investment (or through financial aid) in improved post-harvesting infrastructure[21].

b) The adoption of good agricultural practices – GAP (counting the extra-cost that new management practices involve) implying a better use of the technology available that should result in improving the process, product and volume at farmer level. Meanwhile, record keeping of activity inputs, outputs, depots, volume, unit cost and prices, provides some evidence that GAP has been implemented. This criterion includes four main indicators tested during the

[21] The main outcome of investment (or financial aid) in improved post-harvesting infrastructure, should be both an increased amount of dry parchment coffee offered on the market and a significant decrease of *pasillas* (low quality coffee berries).

surveys of 2008, 2009 and 2011: (i) the proportion of coffee trees renovated yearly; (ii) the percentage of farms with rust-resistant varieties; (iii) the proportion of coffee growers performing soil analysis; (iv) kilos of synthetic fertilisers applied to hectares annually; and (vi) the proportion of producers keeping records.

Table 3.6 Principles and criteria to participate in specialty coffee value chains

Development Area	Criteria	Indicators	Questionnaire survey	Definition and significance
1. Institutional arrangements to facilitate upgrading strategies	Access to financial resources to comply with standards competitive requirements and upgrading [mainly product, process and volume upgrading]. Institutional support could compensate or alleviate the costs of the conversion process and certification, as well as the investments and recurrent and non-recurrent costs associated with compliance. Institutional weaknesses could contribute to the further marginalisation of weaker producers.	• % of producers who received credit	t11a_Do you have credits?	Level of credit received by the farmers is a good indicator of the assistance provided to meet standards requirements
		• % of producers who received subsidies and cash transfers	T13A_pay_Subsidies + t13A_b_Cash_transfers	Several types of costs are involved in the adoption of standards. These two indicators are quantified in terms of the percentage of farmers that received some kind of aid
		• % of producers who received aid in kind	t13A_c_aid_in_kind	
	Provision of training and technical assistance not only to obtain knowledge about standards and certification, but also to increase the competitiveness of coffee producers from different farms size is paramount. Quality must be assured through the implementation of training and technical assistance towards coffee improvement processes.	• Average hours of training in GAP per year	t19_training	Learning process takes both time and consistent training.
		• % of producers who were trained to improve the quality of coffee	t15_participatedg	These two indicators reflect a commitment to quality improvement. The higher the value the greater the probability of improving coffee quality
		• % of producers that participated in coffee tasting trials	t15a_participation_in-cupping_trials	
		• % of producers who fertilise according to technical recommendations	t26d_techsupp	This indicator reveals the existence of technical extension services and training.

Development Area	Criteria	Indicators	Questionnaire survey	Definition and significance
2. Investments and adoption of good agricultural practices for improving upgrading trajectories	High quality and consistent supply must be assured through good post-harvest practices	• Infrastructure to mill (de-pulping) coffee beans (share of producers)	T16b5_Without milling machine	These three indicators reflect that the harvest may meet the very high quality standards required by buyers. The higher the value of these indicators, the lower the chance of meeting buyers' quality standards
		• % of producers making use of efficient sun drying facilities	T16m2_2 covered patio/marquee	
		• % of harvest sold as parchment	P.18c_Share of coffee solving parchment state	
	Increasing yield must be assured through higher tree densities and use of quality inputs such as improved varieties	• % of renovated trees	T6a/T15d	These two indicators reflect changes in strategies to increase coffee yield
		• % of trees resistant to coffee rust	P.16b+f	
	Consistent supply and increasing yield must be assured by application of the right amount of chemical and organic fertilisers	• % of farmers who perform soil analysis	T26b	These two indicators reflect improvement in management and use of available technology
		• Synthetic fertilizers applied (kg/ha)	T2a	
	Improvement management at different levels encompasses interventions at multiple levels to achieve process, product and volume upgrading	• % of producers that keep records	p_16f	This indicator reflects a commitment to increase yield and quality of coffee through management and use of new technology

Source: the author

3.7.2 How adopting VSS affected the pattern of revenues for producers, and their exposure to risk and vulnerability in the specialty coffee value chain?

Recent contributions in value chain studies have suggested that the assessment of the implications of upgrading in a given value chain should not only focus on incomes and direct effects of participation, or power relations within the chain, but also considered how upgrading affects livelihood activities related to issues such as poverty, gender, role of labour and environment implications of the agri-food value chain dynamics (Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010). Based on this, the analysis is divided into three sub-sections: (i) test if the adoption of value added initiatives promotes greater returns and profitability; (ii) test if there have been changes in the distribution of the value added; and (iii) test the evolution of important livelihood-related variables to evaluate changes in exposure to risk and vulnerability.

The first sub-section tests three core economic measures per hectare: gross revenue, production cost and gross margin (as depreciation costs were not included). Within the gross revenue, coffee yield per hectare and farm gate prices per kilogram constitutes the main variables. The analysis will consider both the farm as the basic unit of analysis to compare the statistical differences of the means against certified and control coffee producers, as well as the analysis by farm size, comparing the economic measures between certified farms over five hectares and certified and control farms under one hectare.[22]

The second sub-section tests if there have been changes in the distribution of the value added by presenting the evolution and the differences of the ratio of the price paid to the coffee growers and the retail prices at consumer level for Fairtrade, Nespresso AAA and conventional producers selling Colombian coffee.

The third sub-section incorporates horizontal concerns of GVC analysis and include changes in variables related to working conditions, salaries, income diversification, food security, dependency from coffee, gain and/or loss of household and farm assets, job security, and worker participation, among others.

3.7.2.1 Returns and profitability

In order to assess the profitability of value added coffee production for the producer, total revenues from coffee sales, as well as the production costs were considered together. The total revenue for the coffee grower is composed of the sale of the whole harvest that receives at least three types of prices according to its quality or grade of

[22] Due the fact that the sample of Nespresso AA to AAA coffee producers above five hectares was too short, then the comparisons were based on those farms between one and five hectares.

differentiation. Meanwhile, the production costs include both the labour cost for the maintenance of the coffee trees and the coffee picking during the harvest season as well as the variable input cost. The gross margin will be used as a proxy of the economic profit per hectare. A similar methodology to measure returns from the production and trade of speciality coffee has been followed by other authors (Kilian, Jones et al. 2006, Beuchelt and Zeller 2011)

The first type of revenue comprises those parts of the harvest sold at the value added market, both to the cooperatives in the municipalities and independent intermediaries or private agents sponsored or backed by large traders. This coffee always receives a price premium or differential as a function of both quality and/or certification. According to the data collected during the surveys, this share of the harvest has been growing for the majority of the coffee growers over the last five years as they were getting multiple standards and certification systems (double or triple) in order to improve their chances to satisfy diverse markets and buyers and, in this way, to reduce the risk of relying on a single scheme and assuring a higher income through price premiums for all their coffee. This situation is currently happening in Colombia for those labels which have a big gap between the supply and the volume which is effectively purchased by the buyers, as is the particular case for Fairtrade or 4C (Figures 5.15 and 5.16 describes this situation in Colombia).

The second type of revenue is represented by that fraction of the harvest sold in the spot market at conventional coffee prices. This segment of the harvest is composed not only of that coffee, which does not meet the quality requirements criteria imposed by the buyers and must be sold as conventional, but also by the fraction of certified coffee that is not purchased as a consequence of the oversupply and as a consequence does not receive any value added, or premium. This coffee usually follows the same two marketing channels mentioned above. The third one is represented by that coffee of inferior quality (*pasilla*) which is sold for local consumption. Thus, the total coffee revenue can be described generally as follow:

$$R_i = \sum_{t=1}^{n}[(P_s \times Q_s) + (P_c \times Q_c) + (P_{sq} + Q_{sq})] \quad (1)$$

where Ri= the total revenue from coffee production; i the producers index ($i = 1, \dots, N$); $P_s, P_c \; and \; P_{sq}$ the sustainable, conventional and second quality market coffee price for the respective market channel; $Q_s, Q_c \; and \; Q_{sq}$ for the coffee quantity sold to the sustainable, conventional and second quality market respectively.

If the value coffee production is profitable and offers an improved economic perspective for coffee growers then the gross margin per hectare should be positive and given by the equation:

$$GM_i = \frac{1}{Ha_i}\left(R_i - \sum_{j=1}^{8} C_i^{act}\right) \quad (2)$$

where GM_i= the gross margin of one hectare of coffee; R_i = the total revenue from coffee production (Equation 1); Ha_i = the coffee area in hectares; C_i^{act} the variable that includes eight different activities of coffee production including hired labour for coffee picking (as payment in per quantity), the hired labour cost for chemical fertilisation, milling, renewal of old trees, management, as well as pest, disease and weed control; the input cost (chemical fertilisation as well as pest, disease and weed control) and i the producer index ($i = 1, \dots, N$).

Here, it is important to note that nearly 100% of producers participating in Fairtrade did not have to pay for the certification cost and fees which are required to maintain the certified status within the programme. Interviews during fieldwork, as well data from the surveys, revealed that the main explanation for this is that different actors, including NGOs, development agencies, government, buyers and producers' organisations have been involved in the conversion process, and they usually subsidise the cost of certification. In the case of the Nespresso AAA programme, producers do not have to pay any fee or certification costs, although by 2013, producers will start to migrate to the Rainforest Alliance and farmers will have to meet the requirements to be certified and pay for audits as well as for their certification (Nestlé-Nespresso 2011d).

In order to gain a better understanding of how the value added initiatives influence producers' prices, Equation (1) is then used to derive the average farm gate price that each coffee grower has received across the three marketing channels mentioned above, given the equation:

$$Pn = \frac{R_i}{\sum_{t=1}^{n} [Q_s + Q_c + Q_{sq}]} \quad (3)$$

3.7.2.2 Distribution of value added in the global value chain

Finally, changes in the proportion of the retail price flowing to farmers are addressed by analysing the evolution and the differences of the ratio of the price paid to the coffee growers and the retail prices for three different value added strategies compared to conventional Colombian coffee.

Changes in the governance patterns on the value chain for coffee will be addressed by analysing the evolution and the differences in the ratio of the price paid to the coffee growers and the retail prices for three different value added strategies compared to conventional Colombian coffee, see Section 5.3.1.

Data of the retail prices for the years 2009, 2010, 2011 and 2012 was obtained for Fairtrade coffee, single origin 100% Colombian coffee, and regular Colombian coffee in different distribution channels in United Stated market. These data were provided by the SymphonyIRI Group (ShymphonyIRI Group 2013). Data at retail level from Nespresso AAA were obtained from 17 invoices (five from 2009; three from 2010; five from 2011 and four from 2012) from the Nespresso Boutique located at Selfridges – London. These include the retail prices for different types of Nespresso's single dose preparations including the "Rosabaya de Colombia", which includes Colombia's grains in its blend and its price will be the reference to calculate the ratio. There are no consistent sources of accurate information from this label and the company was unwilling to share this information with the author.

Meanwhile, farm gate prices for regional, conventional and Fairtrade coffees were provided by ten cooperatives of coffee growers, meanwhile data from Nespresso were provided by seven cooperatives. These cooperatives are located in four different regions in Colombia and purchased around 2.1 million bags of 60 kg in 2006 and 1.6 million bags in 2012. These represent nearly one fifth of the total harvest in Colombia. Data covered transactions between 2006 and 2012.

Data of prices at farm level covered transactions between 2006 and 2012 and was provided by ten cooperatives of coffee growers[23] located in four different regions in Colombia and were part of the field work of this thesis (its acquisitions were around 2.1 million bags of 60 kg in 2006 and 1.6 million bags in 2012). These cooperatives buy nearly 50% of the coffee purchased by 35 cooperatives of coffee growers operating in Colombia – see Figure 5.7 on the cooperatives coffee purchases. As such, this data analysed in this section is representative.

3.7.2.3 Measuring if participation in global coffee value chains affects risk and vulnerability

This section tests the evolution of a set of nine selected livelihood-related variables that could be affected by the dynamics of participation in the specialty coffee value chain in Colombia. These variables are related to five issues of: (i) income diversification through food and cash-crop farming to increase income stability and reduce dependency on coffee; (ii) changes of remuneration and salary levels based on labour legislation; (iii) changes in the number of household and farm assets[24]; (iv) increases in production costs

[23] Cooperatives from: Occidente de Nariño, Norte de Nariño, Cauca, Risaralda, Coocentral, Cadefihuila, Alto Occidente, Norte de Caldas, Anserma and Aguadas.

[24] Household assets include appliances such as televisions sets, fridges, stoves, washing machines, computers, internet access, cell phones, and working animals) and farm assets (including constructions and infrastructure, vehicles, motorcycles, dryer-silo, pulping machines, becolsub, engines, chainsaws, scythes, toasters, bascules, electric generators, water pumps, computers, and others).

and cuts in prices. In particular, key variables that expose farmers to livelihood risk and insecurity.

3.8 Field work

The field work aimed first to illustrate and then to analyse and compare two different value-added strategies adopted by Colombian coffee producers. Data was collected in three of the major growing regions in Colombia including the southern department of Nariño and Cauca, the southeast department of Huila and the Central department of Caldas. See Figure 3.1 below for an approximate location of these departments.

The information presented in this work was collected in two stages of fieldwork in Colombia. First, from October 2009 to December 2010, the second, from August 2012 to April 2013. The first phase of fieldwork in Colombia was self-funded, while the second phase was financed by the Centre for Regional Entrepreneurial and Coffee Studies (CRECE).

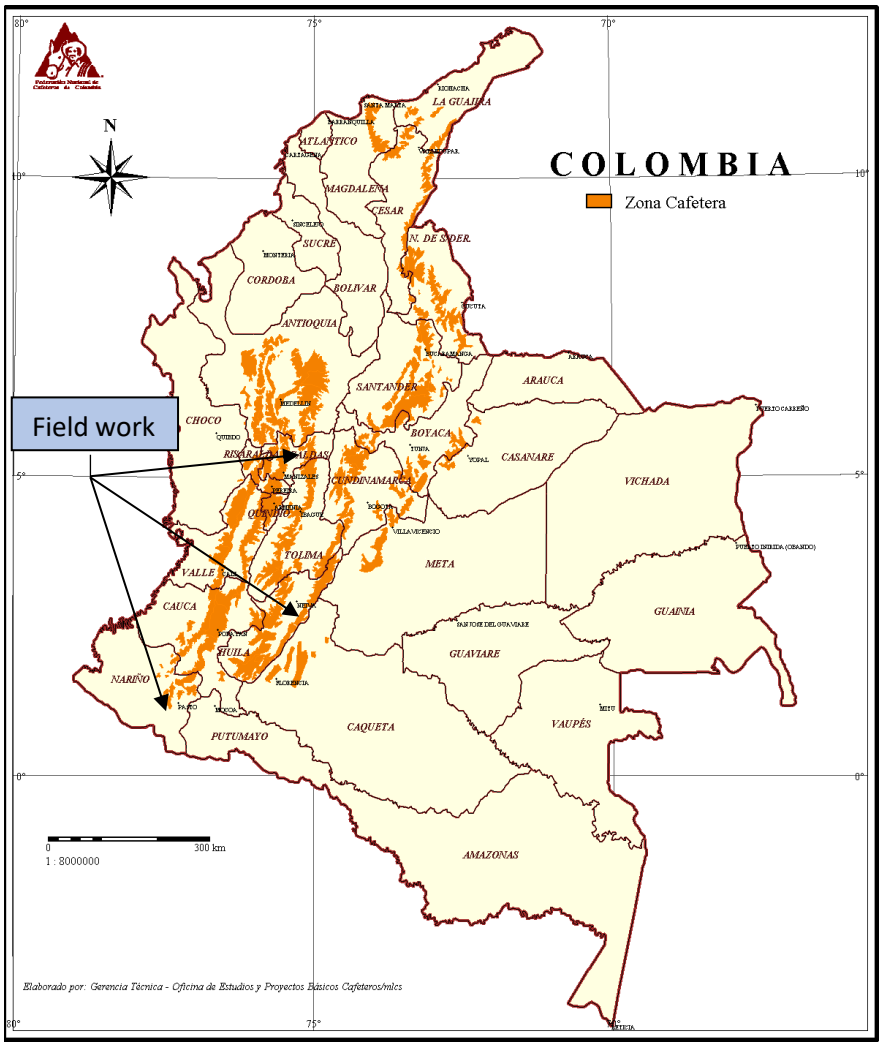
During the field work, the author was affiliated as a visiting researcher at the CRECE, the main purpose of this partnership was undertaking collaborative research with its work on the Committee on Sustainable Assessment (COSA) initiative, in particular, monitoring the performance and assessing the impact of the seven aforementioned sustainable initiatives. In addition, the author contributed to the articulation of an updated theory of change on the sustainable initiatives in the coffee sector in Colombia, the refinement of the questionnaire, and participation from several forums, among other activities.

Meanwhile they agreed to provide me with the databases of the three surveys collected over a span of three years for those farmers affiliated to Fairtrade and Nespresso AAA, and their respective control groups. Additionally, they agreed to introduce a set of questions in the questionnaire survey from 2009 and 2011 dealing with how much coffee producers know about the production of regional or origin coffees, and the second set of questions dealing with the kind of aid received by producers (cash transfers, aid in kind and subsidies). Finally, I was able to participate in the focus groups among producers of sustainable initiatives carried out by the CRECE.

During these two periods of field work I was able to visit 19 municipalities at the departments of Caldas, Huila, Cauca and Nariño to collect both quantitative and qualitative data. During these visits, I was able to complement the survey information through both access to archived documents and extensive documentation facilitated by different organisations. In addition, qualitative data was collected from 130 in-depth interviews with cooperatives and producers associations' staff, exporters, coffee producers, NGOs members´, local traders, Fairtrade and Nespresso AAA´s

representatives, extension service representatives as well as governmental and non-governmental organisations working with coffee production and trade.

Figure 3.4 Locations of the field work and data collection



Source: FNC

In-depth interviews were carried out throughout the length of the fieldwork. When initial interviews could be extended in the light of findings that were starting to appear during the data collection, a return visit would be requested and in most cases, was granted. The average length of the interviews was one and a half hours, as most of them did not allow for a recorder to be used. The notes taken during those interviews provided a rich source of primary qualitative information without which the answers to the questionnaire would have been insufficient to explain the issues that this research set out to study. The list of key informants is presented below in Table 3.4.

Additional to the key informants listed in Table 3.7, six focus group discussions were carried out. Two focus groups were carried out among producers of conventional coffee in 2010 with an average group size of eight participants respectively, and four focus

groups in 2012 among Nespresso AAAA's producers, with an average group size of ten participants. Meanwhile, five meetings were sustained with the representatives of producers associations affiliated to Fairtrade: the Grupo Asociativo San Isidro located in the municipality of Acevedo in the Huila department; the group San Roque located in the municipality of Oporapa in the same department, the group Occicafé at the municipality of La Plata-Huila; and the group "Asprocafé Ingruma" located in Riosucio – Caldas.

This information was useful in gaining an overview of the coffee industry and the market of sustainable schemes in the coffee industry. Once finished, the author's fieldwork input suppliers continued to provide information, in particular, ten coffee growers' cooperatives, from a total of 35 in Colombia, provided data on coffee farm gate prices and the volume purchased in initiatives from 2006 to 2012. Also the National Federation of Coffee Growers – FNC, the greatest Colombian exporter and non-profit organisation, provided data on the volume, price received and premiums of coffee exports in initiatives for the same period.

Table 3.7 List of key Informants during field work

Type of informants	Key informant's main affiliation	Number of interviews
Coffee growers	From 4 departments and 17 municipalities	48
Producers associations	AsproUnión - La Unión (Nariño)	1
	Asprocap - La Unión (Nariño)	1
	Grupo Asociativo San Isidro - Pitalito (Huila)	3
	Occicafe - La Plata (Huila)	1
	Asociación San Roque - Oporapa (Huila)	3
	Asprocafe Ingruma- Riosucio (Caldas)	1
Cooperatives of coffee growers	Cooperativa de Caficultores del Norte de Nariño - La Unión -Nariño	1
	Cooperativa de Caficultores del Occidente de Nariño - Pasto - Nariño	1
	CadefiHuila - Neiva -Huila	2
	Coocentral - Garzón - Huila	3
	Cooperativa de Caficultores del Norte de Caldas - Salamina (Caldas)	2
	Cooperativa de Caficultores de Agudas - Aguadas (Caldas)	1
	Cooperativa de Caficultores de Alto Occidente - Riosucio (Caldas)	1
	CafiCauca - Popayán (Cauca)	2
Local traders	Cooperativa Cafetera de Colombia	1
	Cafecol	2
Exporters	SKN Caribecafe	2
	EXPOCAFE	2
	Virmax Cafe	1
	FNC	1
	Cafexport	1
	Hacienda Venecia	1
Nespresso-Nestlé representative	Colombia representative	4
FLO representatives	Colombia representatives	2
Aid Agencies	USAID	1
	ACDI/VOCA	3
	MIDAS/ADAM	3
Coffee institutions; Almacafé and extension service committees	Federación Nacionald de Cafeteros de Colombia (FNC) Bogotá	12
	Almacafé - Pasto (Nariño)	1
	Alcamacafé - Neiva (Huila)	1
	Almacafé - Manizales (Caldas)	1
	Almacafé - Bogotá (Cundinamarca)	2
	Comité Departamental de Cafeteros de Nariño (Pasto)	2
	Comité Municipal de Cafeteros de Sandoná (Nariño)	2
	Comité Municipal de Cafeteros de La Unión (Nariño)	2
	Comité Departamental de Cafeteros de Huila (Neiva)	1
	Comité Municipal de Cafeteros de Pitalito (Huila)	2
	Comité Municipal de Cafeteros de La Plata (Huila)	1
	Comité Departamental de Cafeteros de Caldas (Manizales)	2
	Comité Municipal de Cafeteros de Aguadas (Caldas)	1
	Comité Municipal de Cafeteros de Riosucio (Caldas)	1
	Comité Municipal de Cafeteros de Pensilvania - Caldas	2
	Comité Municipal de Cafeteros de Neira (Caldas)	1
	Comité Departamental de Cafeteros de Risaralda (Pereira)	1
Certifiers	Natura & Rainforest Alliance Representatives	1

Source: the author

CHAPTER FOUR
The coffee Industry

4.1 Introduction

Structural changes in the coffee industry from the supply and demand side during the last 25 years have greatly impacted the welfare and livelihood of more than 25 million coffee growers in around 70 tropical and sub-tropical countries – most of them small coffee growers. The collapse in 1989 of the economic clauses of the International Coffee Agreement (ICA) that regulated the exports for most coffee producing countries for four decades, led at the beginning of this century to a worldwide glut that plunged coffee prices in real terms to their lowest levels in decades. The causes, extent and impacts of the so-called *Coffee Crisis'* have been documented extensively.

At the same time, however, since the turn of the century coffee producers have seen the changes in the patterns of consumption as a window of opportunity for achieving product differentiation, innovating in different spheres of upgrading and *moving up* the value chain. Along with their production that goes into mainstream or conventional markets, producers today have the chance to add value to their best high quality coffees based on credence attributes as are the adoption of private standards (as discussed in chapter 2) or programmes linked to authenticity of origin. In the mature markets of developed countries consumer preferences have turned to both socially and environmentally produced coffees as well as coffees produced from beans from unique origins that have reached a high intrinsic value with a fine or unique cup profile. These specialty and differentiated coffees are at the very top of the quality coffee pyramid and are priced accordingly. Alternatively, for the mainstream market, the consumption of some emerging non-traditional markets has been growing steadily as a result of improving income distribution and relative economic growth (particularly in new middle-income country markets), as well as from the availability of cheap coffees in soluble form.

As in other agri-food value chains, product differentiation through the adoption of different kind of standards and credence claims in the coffee sector could have significant political economy implications for producers. Particularly, not only because different patterns of value chain governance limits and shapes the capacity of producers to innovate in different spheres of economic upgrading but also because differentiation can have profound repercussions on the livelihoods of farmers located in developing countries. Product differentiation can be initiated at least by three different actors in the coffee value chain: First, by corporate and industrial firm initiatives implementing commercial strategies through the development of firm-specific corporate codes of conduct or private voluntary standards - "differentiation from above"; second, by local

producers and their institutions through marketing and branding strategies linked both to the authenticity of origin or relating to the social and environmental impact - “differentiation from below”; and third by trading partnerships between Alternative Trade Organisations and producer-driven labelling and certification initiatives - “differentiation from the middle” (Humphrey 2006a, Humphrey 2006b).

Therefore, it is expected that the adoption of specific upgrading strategies in compliance with the competitive requirements of VSS should achieved its purpose of improve the socio-economic conditions for producers. Not only in terms of increased cash incomes and profitability, or the distribution of wealth towards a higher share of the revenues from the value chains in which they participate, but also in terms of the evolution of important livelihood-related variables. Up to now, it is unknown if participation in multiple forms of governance structures through the implementation of VSS have progressively contributed to the ability of producers to innovate in different spheres of economic upgrading to increase their incomes and improve the livelihood and well-being of coffee growers as a result.

This chapter is structured to provide a review of the relevant literature on the global coffee industry through addressing two key questions:

- How has the participation in distinct types of differentiated channels, such as private standards, certification schemes, and labels etc., affected the upgrading strategies of coffee producers in the specialty coffee value chain?
- How have these new value added initiatives affected the pattern of revenues for producers, and their exposure to risk and vulnerability in the specialty coffee value chain?

This chapter presents the most important changes that have taken place in the industry in the past 25 years. It is divided into seven sections. After this introduction, the second section focus on the global coffee value chain. The third section deals with the main features and recent trends in the global coffee chain. The fourth and fifth sections present the main characteristics of the specialty coffee market and the main characteristics of the three strategies for adding value and differentiating coffee products mentioned above. The sixth section mention some applications of GVC analysis to the contemporary coffee market. Finally, in the seventh, the main conclusions are stated.

4.2 Governance and value-added in the specialty coffee value chain

Coffee is produced in more than 70 tropical and sub-tropical countries (Fitter and Kaplinsky 2001b, Potts 2007), and about 25 million families are dependent on coffee for

their livelihoods – mostly small coffee farmers with less than five hectares of land (Lewin, Giovannucci et al. 2004) and another 125 million people depend wholly or in part on coffee production, processing and marketing (May, Macarenhas et al. 2004). The coffee global retail sales is a USD 75-billion industry (Euromonitor 2013), making it the second highest traded commodity behind oil (Byers, Giovannucci et al. 2008, UN 2009) and one of the most valuable commodities exported from developing countries located in the tropics (Bates 1997).

The production of coffee has had a significant impact on the economic and social development of the producing areas (OXFAM 2009), 90% of which are located in developing countries (Bates 1997). Historically, coffee exports have been linked to several development 'success stories:' Brazil, at the end of the 19th century, Colombia and Costa Rica in the 1920s, Kenya and Ivory Coast in the 1960s and early 1970s (Topic and Clarence-Smith 2003, Daviron and Ponte 2005). In this sense, coffee marketing is the principal contributor to foreign exchange as well as the source of income for millions of farmers and farm workers (Bates 1997), in particular, a number of African and Central American countries, which derive a high share of their total merchandise exports from coffee (Fitter and Kaplinsky 2001b, Baffes, Lewin et al. 2005). For that reason, the governments of producing countries have treated coffee as a strategic commodity and have converted coffee as one of the first regulated commodities (Ponte 2002). In fact, as Ponte (2002) pointed out "the analysis of the coffee-marketing chain is particularly important in understanding the political economy of development" (Ponte 2002: 1101).

The international coffee market has been subject to substantial political interference (Baffes, Lewin et al. 2005). The difficult circumstances of the world coffee market, supply demand imbalances and low prices in particular, meant that for most of the 20th century, the majority of the producer countries and several of the consumer nations entered into market-regulating agreements or supply-control schemes (Lewin, Giovannucci et al. 2004, Baffes, Lewin et al. 2005, Reina, Silva et al. 2007). The most influential and important scheme was the export quota system under the International Coffee Agreement (ICA) administered by the International Coffee Organization (ICO) from 1962 to its collapse in 1989. Under the ICA, it was possible to keep coffee prices stable through mandatory export quotas for most coffee-producing countries individually (accounting for 90% of global output). Surpluses above the quotas were held as stocks in producing countries or sold to non-member quota importing countries mainly in Eastern Europe and Asia. Although there were problems with this system, it was successful in raising and stabilising coffee prices (Bates 1997, Ponte 2002, Daviron and Ponte 2005) and guaranteeing a survival income to growers (Muradian and Pelupessy 2005).

However, with the end of the Cold War, public support for quotas declined in consuming countries, in particular in the United States, which realised that the Left no longer posed

a political threat to Latin America (Bates 1997, Ponte 2002, Daviron and Ponte 2005). Additionally, the rigidity on the supply side worried the roasters, who feared that competitors could get access to cheaper coffee from non-member countries. This undermined their cooperation within the ICA system. As a result, the ICA came to an end in 1989 as the United States and other consuming members announced their intention to withdraw from the ICA (Bates 1997, Ponte 2002, Daviron and Ponte 2005).

The dissolution of the ICO export quota system agreement generated an oversupply in the market, which predictably and negatively affected international coffee prices. Since the International Coffee Agreement (ICA) ceased to operate in 1989 there have been structural changes in the global value chain for coffee that altered the landscape of the market (Baffes, Lewin et al. 2005) and gave space to new forms of governance (Talbot 1997, Ponte 2002, Lewin, Giovannucci et al. 2004, Baffes, Lewin et al. 2005, Daviron and Ponte 2005, Ronchi 2006). In the absence of any international supply control mechanism for the regulation of coffee production and exports, the coffee policy, led by political negotiations, turned to free market-oriented solutions (Ponte 2002, Daviron and Ponte 2005, Ronchi 2006, Reina, Silva et al. 2007).

These changing patterns in the global coffee chain at the beginning of the 21st century triggered an unprecedented drop in the international prices that dominated the first five years of this century (Osorio 2010), and gave a rise to the so-called coffee crisis that affected millions of coffee farmers around the world. The sources, extent and the real and dramatic social impacts of the coffee crisis have been documented by a number of researchers (Gresser and Tickell 2002, Castro, Montes et al. 2004, Perfetti 2004).

This period of declining prices and price volatility was just one of the impacts of the changing nature of the global coffee sector. Later in this chapter, the questions of power shifts in the global coffee industry, the impact on the distribution of copyrighted news along the chain and changes in supply and demand will be discussed in more detail.

One of the most discussed outcomes of this process has been a general shift of power in the international coffee trade towards to a pull of large roasters located in consuming countries (Pizano 2001, Fitter and Kaplinsky 2001a, Kaplinsky and Fitter 2004, Ponte 2004, Daviron and Ponte 2005, Potts, Fernandez et al. 2007, Reina, Silva et al. 2007). As in other industries, in which food retailers have become more oligopolistic and have exerted their power over upstream actors within the commodity chain (Hatanaka, Bain et al. 2005), as will be discussed below the governance of international coffee trade now is linked to the corporate strategies of roasters who have become more concentrated and consolidated (Ponte 2002, Lewin, Giovannucci et al. 2004, OXFAM 2009).

Under this complex business context, during the last decade different forms of value chain governance have emerged with significant implications for coffee producers. Not only with regard to the capacity and possibilities of the coffee growers to upgrade and *move up* the coffee value chain, or dealing with the configuration of power relationships within the coffee value chains, but also the trade-off between rewards and risk resulting from their participation in the specialty coffee value chain.

Changes in demand have given space to the development of new product segments that focus on product differentiation based on credence characteristics. These include buyer-driven strategies such as the VSS adopting economic, social and environmental concerns in their sourcing practices and producers-driven initiatives both linked to the authenticity of origin or related to the social and environmental impact and which has represented new possibilities for thousands of growers to innovate in different spheres of upgrading and *move up* the value chain (Baffes, Lewin et al. 2005, Reina, Silva et al. 2007) .[25] The nature of these standards and differentiation strategies were discussed in Chapter 2.

4.3 The global coffee chain 1989 – 2014

According to the International Coffee Organization (ICO), the total world production for 2010 was estimated at 132.5 million bags of 60 kg., while exports of green coffee amounted to approximately 96.6 million bags, valued at approximately USD 16.5 billion (ICO 2010a, ICO 2011d) - a substantial recovery from the low of USD 5.4 billion that producing countries received in 2001 for its production of 90.2 million bags and the lowest level since the 1970s (ICO 2003, Lewin, Giovannucci et al. 2004). For the present decade (2010-2020) ICO expects a growth of production of 2.4%, up to a total of 150 million bags of 60 kilos, while regarding consumption, a 2% growth is expected, up to 163 million bags (FAIRTRADE 2010c).

Although there are more than 25 different species of *Coffea,* essentially two varieties of commercial coffee currently exist - *Coffea Arabica and Coffea robusta* (ICO 2011b). Among these, the ICO divides coffee exports into four major groups, see Table 4.1. There are two groups for washed arabicas: Colombian Milds that in normal supply circumstances receive the highest prices, and Other Milds that get the second highest

[25] As the main goal of this work is to know how the adoption of these different strategies of adding value and product differentiation of coffee products have affected the upgrading opportunities of agricultural producers, the four and fifth section of this chapter will describe more deeply the basic features of the differentiated industry. Particular emphasis will be directed both on the main characteristics and trends of the sustainable coffee market, including the evolution of the foremost environmental and socio-economic certifications, as well as the speciality segment, in particular those strategies linked to the authenticity of origin (geographical indications). Appendix 5 and 6 describe the main characteristics of differentiated and conventional markets, as well as the main features of selected sustainable coffee certifications and verifications.

prices. The first one comprises coffee produced in Colombia, Kenya and Tanzania, while the main players in the second category are Guatemala, Mexico and India. The third group consists of hard arabicas from Brazil and Ethiopia known as Brazilian Naturals (or unwashed Arabica) which get the third highest price. The four groups include Robusta coffees from all origins which receive the cheapest prices in the market. Here, Vietnam is by far the main producer, but the Ivory Coast, Indonesia and Uganda are also major players (Ponte 2002, Lewin, Giovannucci et al. 2004, Reina, Silva et al. 2007).

The main differences between these two varieties and categories rely on the quality, chemical composition and intrinsic characteristics of the beans as well as the beans' processing during the post-harvest activities. Robusta plants produce low quality beans with a higher caffeine content and stringent taste, but can be grown at lower altitudes and are more resistant to disease. Meanwhile, Arabica plants produce the best tasting and aromatic beans, and is grown best at higher altitudes over 1000m and occupies the higher end of the markets (Fitter and Kaplinsky 2001b, Kaplinsky and Fitter 2004). Additionally, other variables might influence the organoleptic characteristics – taste and aroma – of the drink as the regions of origin, their production environment, and the practices used for their harvesting and processing (Reina, Silva et al. 2007).

Table 4.1 Coffee producing countries by quality group

Coffee specie	ICO category	Origin	Producing countries
Robustas	Robustas	American Robustas	Brazil,* Ecuador, Trinidad and Tobago
	Robustas	Asian Robustas	Philippines, India, Indonesia, Laos, Malaysia, Sri Lanka, Thailand and Vietnam*
	Robustas	African Robustas	Angola, Benin, Cameroon, Congo, Ivory Coast, Ghana, Guinea, Guinea Equatorial, Gabon, Liberia, Madagascar, Nigeria, Central African Republic, Sierra Leone, Togo, and Uganda*
Arabicas	Natural	Brazilian Naturals	Brazil,* Ethiopia and Paraguay
		Other Naturals	Ecuador and Yemen
	Colombian Milds	Colombian Milds	Colombia,* Kenya and Tanzania
	Other Milds	American Milds	Bolivia, Costa Rica, Cuba, Ecuador, El Salvador, United States (Puerto Rico and Hawaii), Guatemala, Haiti, Honduras, Jamaica, Mexico*, Nicaragua, Panama, Peru, Dominican Republic and Venezuela
		African Milds	Burundi,* Cameroon, Congo, Madagascar, Malawi, Nigeria, Ruanda, Zambia and Zimbabwe
		Asian Milds	India,* Indonesia and Papua New Guinea

Source: (Reina, Silva et al. 2007), * countries with the biggest production

Price levels of coffee in 2001, 2002 and 2003 fell to an average of between 56 and 65 US cents per lb. in nominal terms for Colombian Milds. Figure 4.1 shows, the evolution of Colombia's coffee exports prices, and other origins since 1989. Since 2002, coffee prices

witnessed a continuing ascending trend that came to an end during mid-2011. There was an upward trend without serious obstructions since 2002 with the result that during 2010 and the half of 2011, green coffee price levels reached historic highs, unseen since June 1997, of around 225 US cents per lb in 2010 and 284 US cents per lb in 2011 for Colombian Milds (ICO 2010b, ICO 2011e).

The origin of this price recovery was attributable to a combination of different variables. In the production sector there was a significant reduction in supply as a result of the unprecedented cycle of low prices that dominated the first five years of this century which lead to a reduction in the investment in coffee trees. Added to this, climate problems in a number of producing countries meant that pests and diseases spread, reducing coffee crops in some of the major growing countries as Kenya, Brazil, Vietnam, Colombia and Central America, and external factors such as the continuing depreciation of the US dollar and the high cost of labour and fertilisers that decreased the real value of coffee incomes (Osorio 2010, ICO 2011c) contributed to this situation.

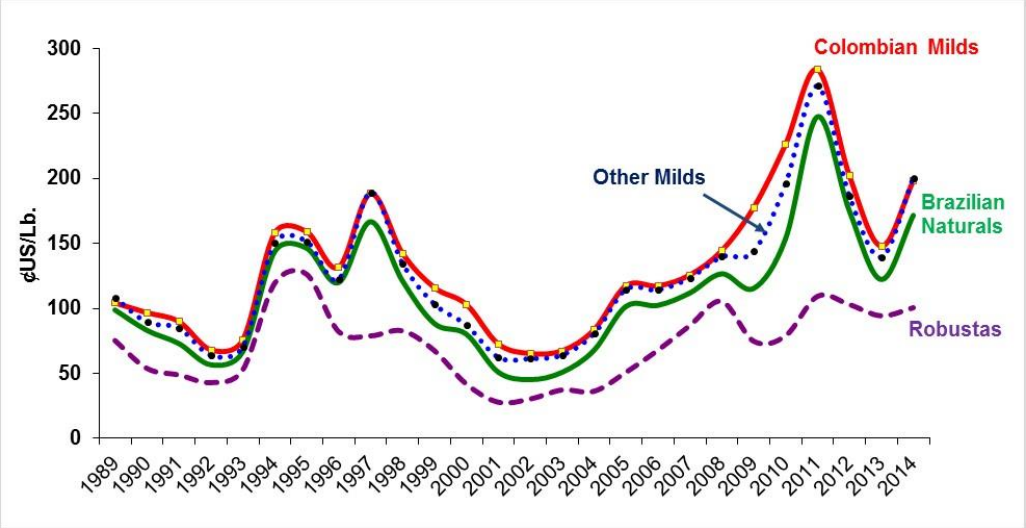
On the demand side meanwhile, there has been a dynamic and steady growth in world consumption, an average annual growth rate around 2.6% since 2000. This increase in consumption is in part due to dynamic performance and innovation of the industry; booming demand for coffee in the emerging economies like China and India, in particular the preference for premium washed Arabicas coffee beans, and the growth of the domestic market in producing countries like Brazil, which is the world's second largest consuming country after the United States (ICO 2011b). World consumption in calendar years evolved from 104 million bags of 60 kg in 2000, to 115 million bags in 2005, and 142 million bags in 2012 (Osorio 2010, ICO 2011c, ICO 2012b, ICO 2014a).

Additionally, tight supplies of certain origins, not only favoured higher prices but also impacted stock levels. In this sense, the levels of certified stocks reaching the lowest levels for many years both in producers and consumer hands (Osorio 2010, TransFair USA 2010, ICO 2011a).

Added to the rise in coffee prices, as will be explained in the following chapter, the drastic reduction of Colombian Milds in particular, moved traders and roasters to compete for coffee of certain origins which propelled an upward pressure on the price differentials for Colombia's arabicas. The sharp reduction in the Colombian crop, combined with a smaller harvest across Central America, Mexico and Peru had an upward effect on cash market differentials (TransFair USA 2010) that contributed to the widening of the differences between the indicator price of the Colombian Milds and its main substitutes including Other Milds and Brazilian Naturals. As a consequence, for example, the price difference between Colombian Milds and the Other Milds increased

to 34 US cents and 30 US cents in 2009 and 2010 respectively compared to its 2008 level of 5 US cents. Since 2011 the differential between Colombian Milds and Other Milds has decreased significantly due to a sharper increases in the price of the Other Milds, due not only to the continued increase in demand to offset the reduced supplies of Colombian Milds (ICO 2010b), but also the supply from Colombia has increased while the availability from Central America has been reduced (ICO 2011f). As such, the differential between Colombian Milds and Other Milds narrowed down in 2011 to 12 US cents, 15 US cents during 2012 and 8 US cents in 2013 (ICO 2011d, ICO 2012a, ICO 2012b, ICO 2013).

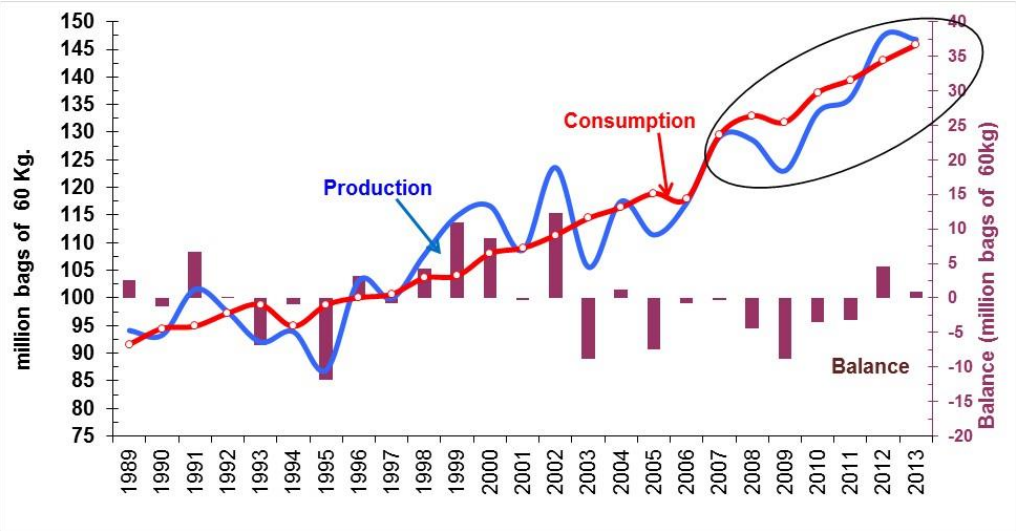
Figure 4.1 Price of International coffee USD/lb. by category, 1989 – 2014



Source: Author's own calculations based on ICO database statistics

Since May 2011 to November 2013 there was a continuing decline in coffee prices. Although all coffee groups have lost value, price falls have been highest among the three Arabicas groups, reaching in May 2013, the lowest levels in over two years (ICO 2013). This cycle of lower prices described in Figure 4.1, is not only due to an oversupply of green beans (Panhuysen and Pierrot 2014) but also due to the speculative processes in the international financial markets, the global macroeconomic turbulence and the political situation in some major importing countries (ICO 2012a, ICO 2012b). The hedge funds and their investment activity on the commodities futures market have been affected negatively as a result of the uncertainty about the world economic situation. As a consequence, founds have changed their positions to become more secure and less volatile assets. This is despite the fact that the balance between supply and demand has remained tight, and consumption has maintained buoyancy, see Figure 4.2.

Figure 4.2 Coffee balance millions bags of 60 kg - crop year 1989-2013



Source: Author's own calculations based on ICO database statistics

4.3.1 Features from the supply side

On the supply side, Robusta's participation has gained terrain against Colombian Milds, as such, the coffee market has seen the emergence of competitors that have enjoyed high levels of productivity and low production costs, meanwhile this has become more concentrated. Since 1989, the world production has increased form 93 million bags to about 147 million in 2013. ICO data shows that four countries – Brazil, Vietnam, Colombia and Indonesia produced 68% of the world's production in 2013, from 54% in 1990 (ICO 2011a, ICO 2011b, ICO 2012a, ICO 2014b). Meanwhile, growing demand has given space to the development of new production segments that focuses on product differentiation which has represented new possibilities for advancing along the value chain for thousands of growers (Baffes, Lewin et al. 2005, Reina, Silva et al. 2007). In general, three important dynamics have been characterised since the ICA ceased to operate in 1899 and particularly once the so called *coffee crisis* comes to the end at the beginning of the 2000´s.

In this sense, the compound annual growth rate for domestic consumption in exporting or producing countries was around 2.4% in the 1990´s and 4.0% after 2000, meanwhile for traditional importing countries the compound annual growth for the two periods mentioned were 0.9% and 2.2% respectively.

In first place, the fast and consistent growth and market success of the differentiated coffee industry in the coffee value chain in the early 2000s. This segment, added additional value to the producers' coffee as it commanded a premium price which paid for quality over conventional coffees (ITC 2002, ITC 2012), and comprises the specialty coffee sector, and within this, the increasing recognition and growing market value for

the sustainable industry. While specialty coffee covers exemplary and higher quality coffee that includes those linked to a single origin (geographical indications) and blends with a unique of good cup, and coffee with a story behind it (ITC 2002, Lewin, Giovannucci et al. 2004, ITC 2012).

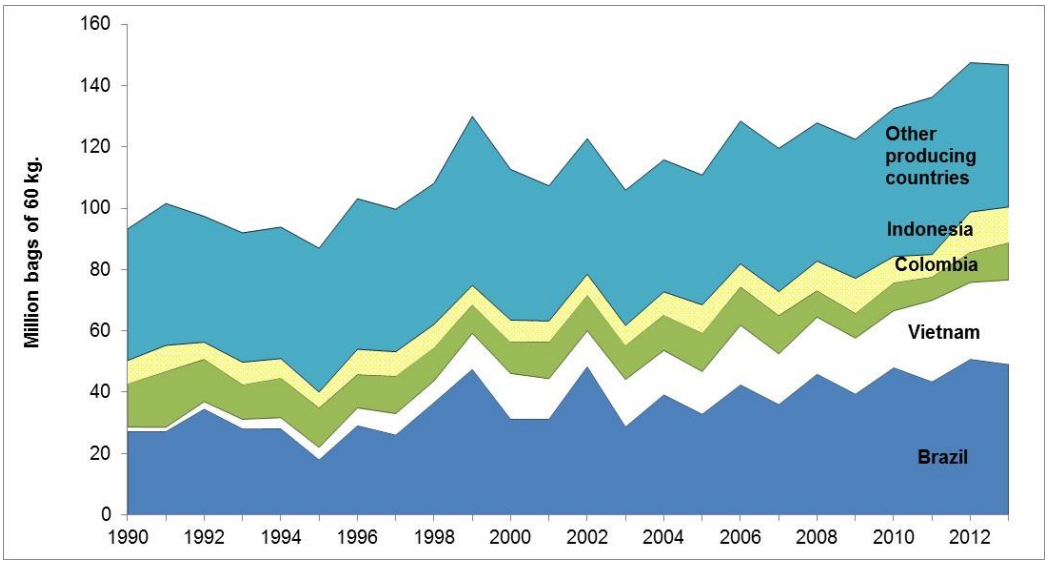
Sustainable coffee revolves mainly around the competitive requirements imposed by non-profit standard settlers and market leading firms certifications' systems that include environmental and socio-economic aspects in their considerations of quality (Ponte and Kawuma 2003, Kaplinsky 2004, Kaplinsky and Fitter 2004). Sustainable coffee is sold as certified by independent third parties, while others are verification-based schemes sold under initiatives that are designed by private companies without third party monitoring and the cost of a certification process (Daviron and Ponte 2005, Giovannucci, Liu et al. 2008). The most popular sustainable standards have captured a significant market share and greater value comparable to agricultural food commodities (Giovannucci, Liu et al. 2008, Giovannucci and Potts 2008, Panhuysen and VanReenen 2012).

In second place, the growing supply explained by the explosion of Vietnamese coffee production, in particular during the 1990s when the production witnessed a compound annual growth rate of around 24% compared to a rate of 4.5% after 2000. This country has become the major robust producer replacing Colombia as the world's second largest producer – a consequence of static supply in the context of rising global production (Fitter and Kaplinsky 2001b, Lewin, Giovannucci et al. 2004, Baffes, Lewin et al. 2005, Daviron and Ponte 2005). Vietnam's coffee production rose from 1 million 60kg bags in 1990 – around 1.5% of world production, to almost 28 million bags in 2013 – almost 19% of world production – a dramatic 1,878% Robusta production increase in 24 years. This situation permanently altered the scene of the coffee market (Baffes, Lewin et al. 2005) and also represented the biggest change in country market share, see Figure 4.3.

This situation, in particular, has reconfigured the supply between Arabicas and Robustas. From a historical distribution of approximately 70% and 30% of the market respectively, Robusta´s participation rose in recent years and reached around 40% of total worldwide production in 2013 (ICO 2003, ICO 2010a, ICO 2011a, ICO 2012a, ICO 2014b). As the production of washed Arabicas (Other Milds and Colombian Milds in particular) have been almost stagnant, even decreasing. This situation has generated an important substitution effect in the market and has increased the proportion of Robustas and Naturals used in most industrial blends of roasted and instant coffee against Colombian Milds and Other Milds, in particular (Lewin, Giovannucci et al. 2004), whose participation in the global production supply decreased by around 16 percentage points among 1989 and 2013. As will be discussed below, roasters have taken advantage of this situation as they have been able to be less dependent on any type of origin by adopting

new techniques that enables then to reach the same level of quality with less expensive coffee as Robustas and some Naturals.

Figure 4.3 Coffee production by country (million bags of 60 kg) - crop year 1989-2013



Source: Author's own calculations based on ICO database statistics

Third, the productivity transformation of Brazilian coffee production in terms of volume, productivity and quality, has expanded its market share as the first global exporter. That transformation augmented its position as the largest producer of around one-third of the market, as a result of moving its plantations to the north to reduce the effect of frost and the introduction of irrigation to avoid droughts (Baffes, Lewin et al. 2005, Reina, Silva et al. 2007). These two countries, Vietnam and Brazil, injected nearly 48 million bags into the market in 24 years, augmenting global production to around 41% since 1990 to reach 146 million bags in 2013 (ICO 2014b, ICO 2015), an expansion in volume at the beginning of the century that was significantly larger than the growth of demand and opened the space to offer attractive options to acquire coffee at low prices, ideal for the blend market.

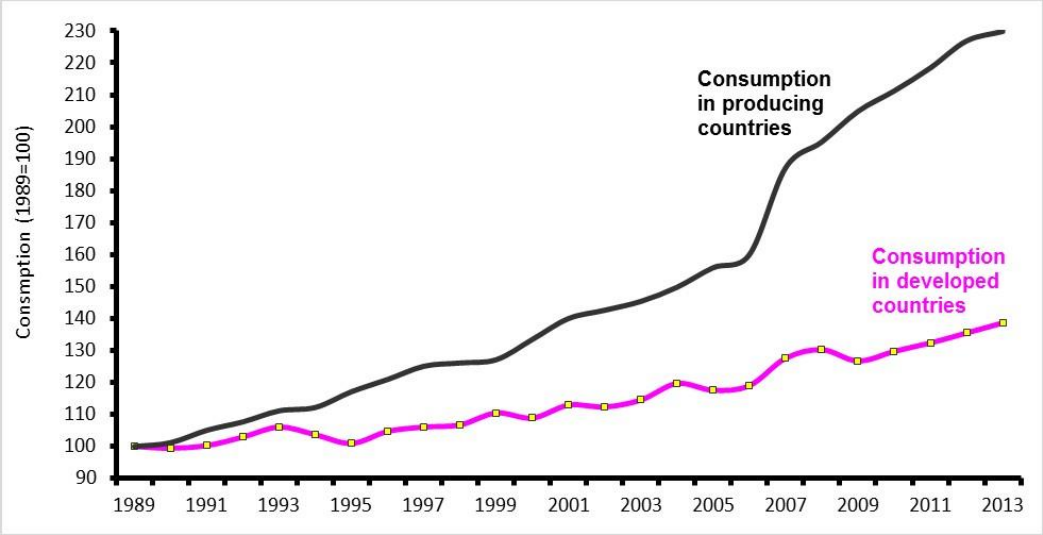
4.3.2 Features form the demand side

World consumption evolved from 73 million bags in 1989, to 79 million bags in 2000 and reached about 146 million bags in 2013. A compound annual growth rate in aggregate demand in the period of around 1.8%. From this volume six countries account for nearly 55% of world consumption: the United States accounts for about 16%, followed by Brazil (14%), Germany (7%), Japan (5%), and France and Italy (4% each). However, growth of demand hides important differences, not only between the 1990´s and the 2000´s, but also between the mature markets of Germany, Italy, France, Spain, Sweden, the United States or Japan, and the emerging markets of Russia, Ukraine, Korea or China and producing or exporting markets as Brazil, Costa Rica, India and Ethiopia where there is a

long and well established tradition of coffee drinking (Reina, Silva et al. 2007, ITC 2012, ICO 2012a, ICO 2012b).

During the 1990´s the compound annual growth rate in aggregate demand was 1.2%, while during this century the growth rate has been around 2.3%. However, this trend differ between consuming and producing countries. In this sense, the compound annual growth rate for domestic consumption in exporting or producing countries was around 2.4% in the 1990´s and 4.0% after 2000, meanwhile for traditional importing countries the compound annual growth for the two periods mentioned were 0.9% and 2.2% respectively. This differences in demand both between periods of time and countries have implied that the share in world consumption for producing countries changed from 21% in 1989 to 31% in 2013. Figure 4.4 clearly depicts this trend comparing consumption between consuming and producing countries.

Figure 4.4 Trends in consumption by producers and consumers (1989=100)



Source: Author's own calculations based on ICO database statistics

Regarding this situation, consumption volumes have stagnated or have been growing slowly particularly in mature markets which together account for nearly 69% of total global demand (ICO 2015). In mature markets located in developed countries, for example, while the consumption of conventional coffee actually declined, specific niches or segments have demonstrated significant dynamism (Reina, Silva et al. 2007, Giovannucci, Liu et al. 2008) within which speciality and sustainable certified coffee has shown the highest rates of growth. Wealthy consumers in mature markets, in particular, are increasingly making choices not only based considerations on quality and origin but also on the basis of social, economic and environmental impact concerns (Humphrey 2005, Ponte and Gibbon 2005, OXFAM 2009).

Contrastingly, consumption has been growing steadily during the last 20 years in some emerging non-traditional markets such as China, Korea, India and Eastern Europe (Russia and Ukraine) as a result of improving income distribution and relative economic growth as well as from the availability of cheap coffee in soluble form – Robustas in particular, that have allowed the roasters to offer reasonable prices. Although with a small participation in global demand, this new dynamic has opened additional space for future market expansion and has generated incentives to satisfy such demand with unique and credible products (Reina, Silva et al. 2007).

Meanwhile, exporting countries have been carrying out promotion programmes designed to increase domestic consumption and reduce dependency from buyers located in developed countries (Lewin, Giovannucci et al. 2004). The outcome of this strategy has been a higher growth trend on consumption compared with consumers located in developed countries depicted on Figure 4.4. Brazil, the biggest consumer among the producing countries, has been experiencing a notable growth in demand (Castro, Montes et al. 2004, Lewin, Giovannucci et al. 2004, Baffes, Lewin et al. 2005) as a result of a vigorous campaign to improve local consumption based on affordable prices and improving quality (Reina, Silva et al. 2007). This strategy has recently been followed by producing countries like Colombia (FNCc 2011).

One possible way to visualise the current market characteristics and understand both the roasters and blender demand strategies as well as consumers' decisions is imagining the coffee market as a pyramid (Figure 4.5), with the most economical presentations of coffee at the bottom, such as soluble and instant coffees; then come the standard commercial blends, some of which are of better quality and are somewhat more expensive, and then the differentiated market at the top (Lewin, Giovannucci et al. 2004, Reina, Silva et al. 2007). As such, the market expansion in coffee demand has taken place at the two end segments of the quality coffee pyramid. These two markets have demonstrated significant dynamism and there are positive predictions signalling a tremendous possibility for a future market (Lewin, Giovannucci et al. 2004, Reina, Silva et al. 2007, Giovannucci, Liu et al. 2008, Giovannucci, Scherr et al. 2012). The bottom segment of the pyramid is led by the economic presentation of soluble and instant coffee produced with lower-quality beans of Arabica and some Robustas whose quality could be improved through a technological process. This segment has been growing promisingly in the producing countries and the emerging markets such as China, India and Eastern Europe.

Meanwhile, the stagnant middle section is composed of the sales of conventional coffee, that represents the great majority of the total demand and comprises typical industrial grades and standard commercial blends (Lewin, Giovannucci et al. 2004, Reina, Silva et al. 2007, Giovannucci, Liu et al. 2008). According to Lewin et al (2004, p. 11), this section

represents the great majority of the total volume demanded and its stagnation presents a challenge to sustainable growth for the many producers of average quality coffee who supply it. This situation, predominantly for those in the Arabica Milds category, poses enormous pressure in the fight for a relatively static market share. This is particularly true for those producers that are neither able to significantly lower their costs nor improve their quality or otherwise differentiate themselves.

Figure 4.5 The quality coffee pyramid

Source: adapted from Reina et al. (2007)

Note: The areas of the pyramid do not represent the actual size of each market segment.

*Ready-to-drink; **Filter packets for individualized consumption; ***Protected Geographical Indication (PGI)

The top level of the coffee quality pyramid is constituted by the differentiated market. This segment of the coffee value chain is constituted mainly by that coffee labelled as sustainable which includes environmental and socio-economic aspects for their considerations of quality (Reina, Silva et al. 2007, ITC 2012) and the speciality coffee which includes highly intrinsic quality coffee with a unique cup (ITC 2012) both of a single origin and blends that receive a substantial premium price due to its limited availability. In this segment high quality coffees with good cupping can be found as well as such flavoured, espresso-based, ready-to-drink coffee and filter packets for individual consumption.

4.3.3 International traders, coffee processors, and major branding companies

Companies at the buying and retailing end of the coffee value chain have seen a new opportunity to gain power along the coffee value chain with the renewed emergence of new consumption patterns, the growing importance of conscious consumption, single

origin coffee, the proliferation of coffee chains and speciality shops and out home consumption (Ponte 2002, Muradian and Pelupessy 2005). By taking advantage of a variety of features, during the last fifteen to twenty years – roasters, in particular, have had the ability to introduce new forms of governance and coordination in the global value chain for coffee and in this way have affected power relationships and the balance of power along the coffee value chain (Lewin, Giovannucci et al. 2004, Baffes, Lewin et al. 2005, Daviron and Ponte 2005).

In the case of roasters, they have increased their influence on the upstream actors of the value chain changing the balance of power in the coffee value chain, including international traders, by taking advantage of the oversupply and the market concentration, but overall as a result of at least three specific situations. First, roasters have been able to increase flexibility in blending by substituting traditional coffee origins in most industrial blends (Giovannucci, Leibovich et al. 2002) by making use of technological solutions that enable them to use less expensive coffee in order to be less dependent on any type of origin of coffee, implying that the premiums commanded by certain types of coffee cannot be retained for long (Lewin, Giovannucci et al. 2004).

Second, roasters have learned to work with lower working stocks (Castro, Montes et al. 2004, Lewin, Giovannucci et al. 2004, Baffes, Lewin et al. 2005) and have been able to set the terms of coffee supply for traders in order to guarantee a continuous supply of a variety of origins and coffee types (Daviron and Ponte 2005) and managing quality along the chain (Muradian and Pelupessy 2005).

Third, roasters have created their own private standards and certifications' systems, often in partnership with nongovernmental organisations (NGOs) (Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012). In this way, they not only coordinate supplier activities and implement value chain governance (Humphrey and Schmitz 2001, Bain, Deaton et al. 2005) and represent a tool of defensive brand management (Neilson 2008, Neilson and Pritchard 2009), but also differentiate their products from those of their competitors (Humphrey 2005), to indicate superior quality features (Henson and Humphrey 2010) and to show to their customers that they are also concerned with food safety and the environmental, economic and social impact of food production and processing (Humphrey 2005).

About these three situations, roasters have responded to the increase in supply of lower cost and inferior quality of natural and Robustas coffees as was seen in Figure 4.3 by learning to increase its use in their blends and be less dependent on any type of origin of coffee (Ponte 2002, TransFair USA 2010). Traditionally, Robusta have been in blends to reduce its price as it is used as a filler. Added to the fact that the quality of less expensive coffee is improving steadily, roasters have adopted new techniques such as

steaming that enables them to remove some of the defects and reduce the harshness of taste of some Robustas and reach the same level of quality with cheap beans (Castro, Montes et al. 2004, Kaplinsky and Fitter 2004, Lewin, Giovannucci et al. 2004, Baffes, Lewin et al. 2005, Daviron and Ponte 2005).

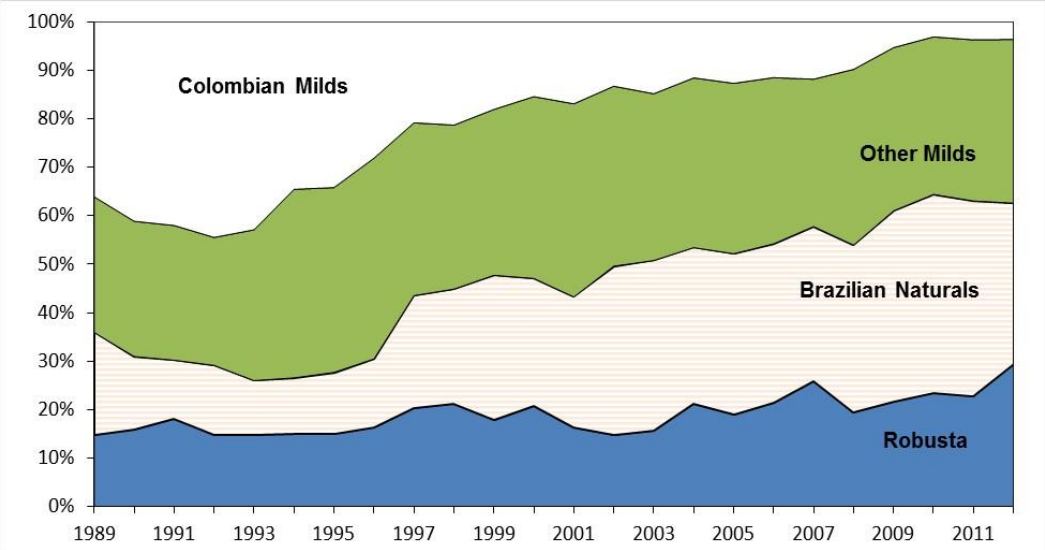
This situation has allowed roasters and blenders to substitute coffees more easily from different origins in their blends and take advantage of lower prices. As a result processors are less vulnerable to shortages of particular types of coffee (due to environmental or political factors), poor quality crops in particular years and, critically, from price variations (Castro, Montes et al. 2004, Kaplinsky and Fitter 2004, Lewin, Giovannucci et al. 2004, Baffes, Lewin et al. 2005, Daviron and Ponte 2005). This is a very strategic move from the major roaster and blender companies that have made them less dependent on certain key origins as this development lets them take advantage of bean availability and minimises costs (Baffes, Lewin et al. 2005) by replacing their blends' high-cost (i.e. Colombian Milds and other Milds) for low-cost beans (i.e. Robustas or Brazilian Naturals) (Kaplinsky and Fitter 2004). These trends, subsequently, have affected producing countries differently as demands for different types of varieties of coffee have changed drastically (Castro, Montes et al. 2004, Lewin, Giovannucci et al. 2004, Baffes, Lewin et al. 2005).

One example of this case can be seen in the evolution of the coffee market in Germany, the largest coffee consumer in Europe with a market share of 23% (ICO 2011d) and nearly 19 million bags of 60 kilogram imported in 2012, where the composition of green coffee imports have varied significantly during the last two decades (Reina, Silva et al. 2007). In 1989, 64% of the green coffee imported to this market were washed Arabica (36% Colombian Milds and 28% Other Milds); in 2003, 42% of imports were washed Arabicas (15% Colombian Milds and 27% Other Milds), finally in 2012, nearly 38% of the green coffee imported were washed Arabica (4% Colombian Milds and 34% Other Milds). These types of coffee have been replaced by increased purchases from Brazilian Naturals and Robustas of lower quality and price that represented nearly 63% of German imports in 2012, while Colombian Milds in particular have been squeezed from the market. This substitution effect in the market can be seen in Figure 4.6 and has been also exposed in Figure 4.3.

Branding companies use blending formula of beans of different types of origin for three key reasons: (a) in order to be able to balance or stabilise the taste of different types of beans as well as for obtaining a specific aroma in the roasted coffee and a specific flavour and body when it is brewed. Consumers might prefer a different spectrum of taste and coffee branders are interested in satisfying these needs managing the variability of coffee by achieving the same profile (Fitter and Kaplinsky 2001b, Kaplinsky and Fitter 2004, Daviron and Ponte 2005), (b) in order to take advantage of lower prices, (c) by

blending, the roaster is free from a particular origin and avoids consumers making a connection with growers and recognising a specific coffee bean instead of brands (Kaplinsky and Fitter 2004). In this way, "blending is the most important operation for a roaster" as this operation allows the branders to assemble a product from a portfolio of substitutable beans (Daviron and Ponte 2005).

Figure 4.6 Germany´s composition of imports by type of green coffee, 1989 - 2012



Source: Author's own calculations based on ICO database statistics

The second strategy through which the roaster has changed the balance of power in the coffee value chain has been through their capacity to work with lower levels of stock, in particular the implementation of "supplier managed inventory" - SMI (Ponte 2002, Castro, Montes et al. 2004, Lewin, Giovannucci et al. 2004, Baffes, Lewin et al. 2005, Daviron and Ponte 2005). The aim of this strategy not only has to do with the roasters´ interest concentrating more on marketing and branding (Ponte 2002, Daviron and Ponte 2005), but also to increase the logistical demands on suppliers as international traders and local exporters and be less dependent on any actor (Ponte 2002, Castro, Montes et al. 2004, Lewin, Giovannucci et al. 2004). This situation of out-sourcing stock management (Daviron and Ponte 2005) has led to more demands on the logistical capabilities of suppliers (Lewin, Giovannucci et al. 2004) in order to satisfy the needs of major roasters (Daviron and Ponte 2005). As a result, there has been a process of consolidation of the supply chain in fewer major international trading companies with the capacity to diversify upstream into the producing countries through the development of close working relationships with local exporters (Gibbon 2001, Castro, Montes et al. 2004, Lewin, Giovannucci et al. 2004) in order to compete for strategic origins (Ponte 2002). During the last decade, for example, in order to enforce power over their respective supply chains, international traders, as well as their representatives in producing countries, are intensifying their supply chain relationships with growers (Gibbon 2001).

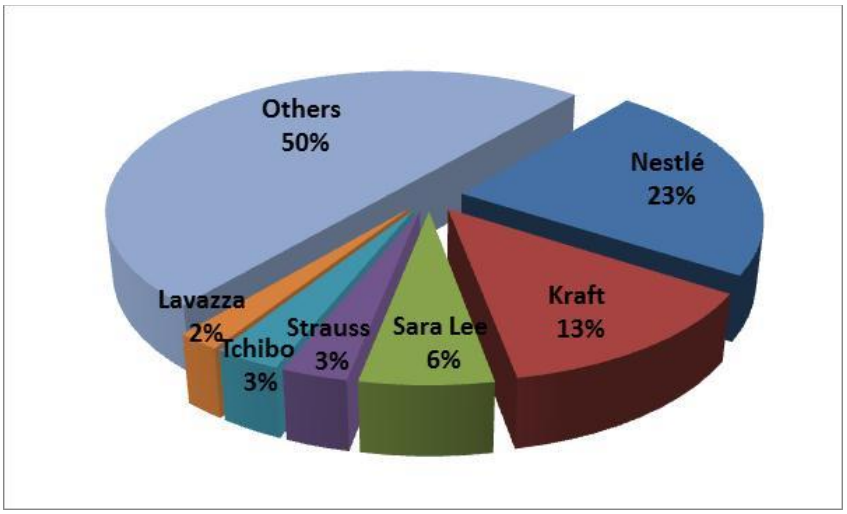
In third place, the market authority of roasters is evidenced by the increasing importance and proliferation of private standards, labels and certifications' systems that have incorporated a set of basic socio-economic and environmental standards along with complex coordination, competitive requirements and parameters (Daviron and Ponte 2005, OXFAM 2009). Mainstream roasters, normally embedded in the selling of conventional coffee through different brands, have shown an interest in capturing a bigger market share of the rapid growth of the speciality industry and growing sales of differentiated and sustainable coffee (Daviron and Ponte 2005, Ponte and Gibbon 2005, TransFair USA 2010).

As such, an increasing number of major coffee roasters with considerable buying power and retailers have been involved in the development and establishment of firm-specific codes of conduct and sourcing standards for quality and sustainable coffee production. Although these codes of conduct or verifications are not a certification scheme as are they are not third party certified, these initiatives as such are exerting a greater influence on value chain structures and have reached dominant market positions in several producing countries. These initiatives now compete in the coffee market both with standards and certifications' schemes created and settled by Alternative Trade Organisations, Non-Governmental Organisations and other kinds of civil society organisations as well as with those differentiation initiatives created by producers' programmes linked to authenticity of origin.

Regarding this fact, for example, the available statistics have indicated that there was a process of concentration and vertical coordination in the coffee industry at the beginning of the century (Daviron and Ponte 2005), in which the corporate strategies adopted by large roasters, blenders and international traders behaviour changed radically in order to gain power and benefit from the value added along the value chain (Lewin, Giovannucci et al. 2004, Baffes, Lewin et al. 2005).

In 2011, for example, six roasters controlled 50% of this activity, see Figure 4.7, while the level of concentration in the market for the international coffee trade was even higher as only three traders, Neumann, Volcafe and ECOM controlled almost 50% of the market (OXFAM 2009). About this situation, some authors have emphasised that before the commodity agreement, the international coffee trade was not driven by any actor, during the post-ICA regime the higher levels of concentration in the roaster segment have led to labelling the coffee supply chain as being "roaster driven" (Ponte 2004, Daviron and Ponte 2005, Potts, Fernandez et al. 2007).

Figure 4.7 Green coffee market share by roasting and instant manufacturing companies in 2011



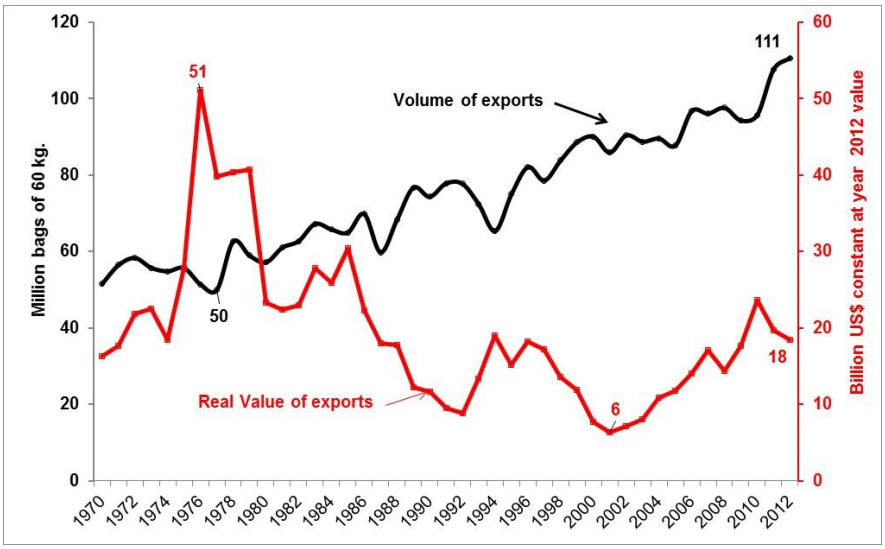
Source: Euromonitor 2011

The repercussions of this market trend are disputed. On one hand, a group of scholars based on the analytical tool of global value chain analysis sustain that producing countries are receiving a decreasing share of the "total amount of money spent by consumers to purchase products for final consumption" (Talbot 1997: p. 63), and the value added along the chain has mostly benefited consuming countries (Talbot 1997, Fitter and Kaplinsky 2001a, Giovannucci, Leibovich et al. 2002, Kaplinsky and Fitter 2004, Lewin, Giovannucci et al. 2004, Ponte 2004, Daviron and Ponte 2005, Gibbon 2005, Kaplinsky and Morris 2008). They argue that that concentration along the retail end of the coffee value chain has affected the distribution of total income generated along the coffee chain and has reduced the share of the retail price accruing to the producers while roasters, retailers and coffee bar processors have been enjoying a growing prosperity thanks to the accumulation of economic power.

As such, the share of the total income retained by producers has dropped in time, not only due to the oversupply and low prices for green coffee, but also due to the facility of roasters to maintain retail prices at relatively stable levels (Ponte 2004), and create brands and well distribution chains, added to the fact that in many cases, roasters do not carry out particularly complex industrial processes, or processes requiring high levels of cutting edge technology (Kaplinsky and Morris 2008).

During the ICA years, consumers spent about USD 30 billion, approximately one third of which went to the exporting countries. This share more than halved to 15% at the beginning of the century, although there has been an increase in recent years of around USD 18.4 billion reaching producers in 2012 (ICO 2015) of the USD 76 billion spent on consumption (Euromonitor 2013) despite the increase in coffee production volume and exports over the last 15 years, Figure 4.8

Figure 4.8 Trends in production and value of all kind of coffee exports – coffee year 1970 – 2013 – USD constant term of 2013.



Source: Author's own calculations based on ICO and BLS database statistics

On the other hand, however, other authors sustain that global value chain analysis offers an incomplete account of value determination as the gains at one node or stage of the chain cannot be seen as being at the expense of value at another (Gilbert 2008). They argue that the decline in the coffee growers share of the retail prices is not entirely due to the growth in concentration in the industry (Lewin, Giovannucci et al. 2004, Gilbert 2008) as certain brands and distributors have had the ability to capture the majority of the added value of coffee through the control of symbolic or abstract aspects of production, such as services or the atmosphere in coffee shops (Daviron and Ponte 2005). In this respect, Gilbert (2008, p. 7) pointed out that the decline in the producer share of the retail price is "due to the fact than only around half of the cost underlying retail coffee prices are attributable to the FOB [freight on board] price of coffee." As such, the relative coffee content of the final consumption fell as new and increased value was being added to the products in the consuming countries through processing, marketing and transformation at the retail level (Lewin, Giovannucci et al. 2004, Gilbert 2008).

4.4 Basic features of the specialty coffee market

Maybe the most important event in the early 2000s in the coffee industry has been the fast growth and market success of the differentiated industry which comprised the specialty coffee sector and within this the increasing recognition and growing market value for the sustainable industry (Ponte and Kawuma 2003, Kaplinsky 2004, Kaplinsky and Fitter 2004).

This industry emerged from almost negligible quantities in the late 1990s to become a significant portion of today's coffee exports[26] (Giovannucci, Liu et al. 2008, Giovannucci, Liu et al. 2008a, Giovannucci 2010). The sales of which have been labelled speciality coffees and certified sustainable coffees, compared with conventional coffee, which have demonstrated significant dynamism and market penetration (Giovannucci, Liu et al. 2008, Panhuysen and VanReenen 2012).

Several authors agree that the emergence of the specialty coffee industry was a reaction to the supply of identical, anonymous and standardised blends of regular-to-poor quality produced by commercial roasters and available through mainstream brands of coffee in supermarkets and other retail outlets, in North America, in particular, and to a lesser degree, in Europe or Japan (ITC 2002, Ponte 2002, Ponte and Kawuma 2003, Kaplinsky and Fitter 2004, Ponte 2004, Daviron and Ponte 2005, Giovannucci and Ponte 2005, Ponte and Gibbon 2005, Giovannucci, Liu et al. 2008, Pierrot, Giovannucci et al. 2011). Meanwhile, markets have moved to satisfy "consumer awareness" of third world poverty or environmental conditions in coffee growing regions (Neilson 2008: 1608) by using voluntary standards and certifications in a way not foreseen a decade ago.

As mentioned above the generic term specialty includes both coffee linked to authenticity of origin (geographical indications), as well as products with high unit prices among others: flavoured and espresso-based coffees and those coffees with a story or narrative behind them such as those labelled as gourmet, exotic or regional (ITC 2002, Lewin, Giovannucci et al. 2004, ITC 2012) available both at sophisticated coffee shops and on the shelves of supermarkets. In the particular case of the concept of sustainability in the context of the speciality coffee industry, it refers to coffee that is grown and is viable economically for farmers, following the criteria of environmental protection and socio-economic fairness (Ponte and Kawuma 2003, Ponte 2004, Daviron and Ponte 2005). Sustainable coffee is sold as certified by independent third parties, while others use verification-based schemes sold under initiatives that are designed by private companies without third party monitoring (Daviron and Ponte 2005, Giovannucci, Liu et al. 2008). Appendix 5 describes the main characteristics of differentiated and conventional markets.

The coffee sector is one of the most important agri-food industries in terms of both the number and frequency use of such differentiation strategies (Giovannucci, Liu et al. 2008a). In the case of sustainable coffee, for instance, there is some agreement on the fact that no other segment of the global coffee industry has grown as consistently and as fast as the one for coffee which is certified as sustainable (Giovannucci and Potts

[26] There is a vast array of literature about these tendencies and anecdotal evidence about the effects of the adoption of sustainable production practices. See, Giovanucci and Koekoek (2003), Giovannucci and Ponte (2005), Daviron and Ponte (2005), Ponte (2004), Bacon (2005), Lewin et al. (2004), Neilson (2007).

2008, Potts, Van der Meer et al. 2010, Pierrot, Giovannucci et al. 2011). Over the past ten years the production and sales of green coffee that has adapted to any type of economic, social and environmental certifications and verifications has been increasing with common annual growth rates of about 30-50% and millions of producers have been adopting sustainable standards both led by private initiatives as well as by trading partnerships between ATOs and other type of organisations (Giovannucci, Liu et al. 2008, OXFAM 2009, TransFair USA 2010, Pierrot, Giovannucci et al. 2011, Nestlé-Nespresso 2011d). From this production of sustainable coffee, around 75% of all of it comes from Latin America countries, mostly from countries like Colombia, Brazil and Peru (Potts, Van der Meer et al. 2010).

Two interrelated reasons could explain the phenomenon. First, from the farmer's side the low prices at the beginning of the century presented the specialty industry as a contra-cyclic business that offered substantial increases in income, price differentials and potential future markets for suppliers. As a result, coffee policy in producing countries were redirected and hence a growing group of producers started to pursue strategies that were independent from commodity pricing at the exchanges,[27] in order to capture more of the downstream margins in the coffee chain and increase returns by earnings premiums (Reina, Silva et al. 2007). Second, from the demand side, there were substantial changes in the consumption patterns, including new ideas about quality and conscious consumption (Ponte and Gibbon 2005). As occurred in the wine industry more than 20 years ago (Fitter and Kaplinsky 2001b, Kaplinsky and Fitter 2004), the drinker wanted to know where the coffee came from (Kaplinsky and Fitter 2004), the intrinsic and intangible qualities in relation to coffee origin (Daviron and Ponte 2005, Ponte and Gibbon 2005, Neilson 2007, Neilson 2008), as well as the attributes of production and process methods which include both environmental and socio-economic aspects in their consideration of quality (Ponte 2002, Neilson 2008, Giovannucci, Liu et al. 2008a, Alvarez 2010, Pierrot, Giovannucci et al. 2011).

Notwithstanding, the situation of the specialty market has changed substantially during the last five years with still unknown effects on coffee producers' livelihoods. In first place, producers and consumers have witnessed an unprecedented proliferation of labels and initiatives created either by market leading firms which have made commitments to source coffee from sustainable suppliers or non-profit standards-settlers. In second place, the growing imbalance between the certified production compliant with the requirements of voluntary standards systems/voluntary sustainable initiatives and the volume of coffee effectively sold as standards compliant or

[27] Most of the standard or mainstream coffee is traded following the norms of the "C" contract (The ICE Futures U.S. in New York) and the LIFFE Contract (London International Financial and Future Exchange). The first contract set the benchmark for Arabica coffee being traded while the second one was for Robusta coffee (May, 2004).

sustainable (Giovannucci, Liu et al. 2008a, OXFAM 2009, Potts, Van der Meer et al. 2010, Panhuysen and VanReenen 2012, Panhuysen and Pierrot 2014, Potts, Lynch et al. 2014); and third there was an upward trend in conventional coffee prices (depicted above) which reduced the overall price differences for specialty coffee as well the economic incentives to differentiate and improve the quality. The following three sections make an effort to describe these changes both from the demand and supply side as well as the main features of the specialty market. However, the main consequences of this situation will be dealt with in the Colombian case in the next chapter based on field work experience.

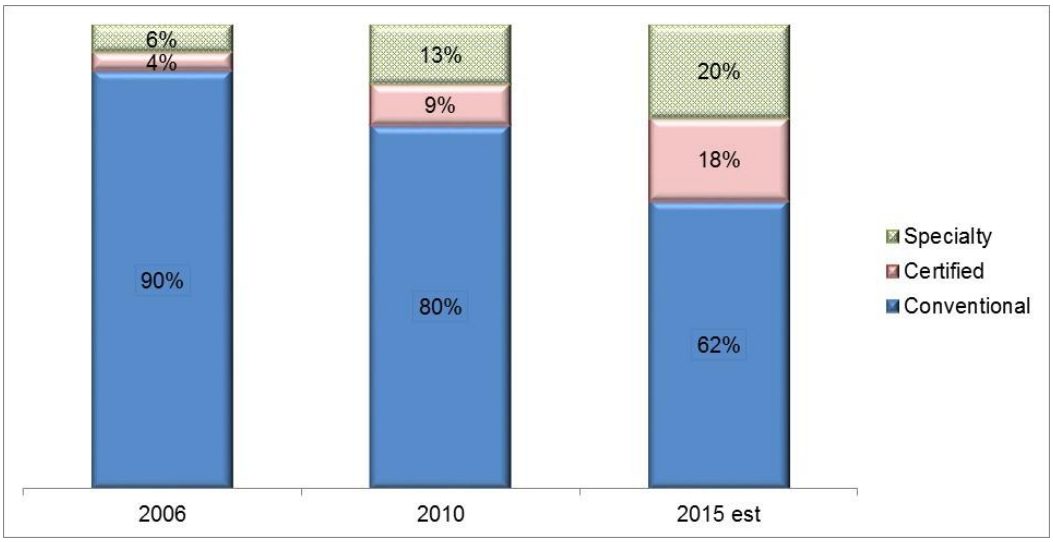
4.4.1 Features from the demand side of the specialty industry

During the last fifteen years the specialties and differentiates coffees jumped from a niche to a segment of the coffee market. By the end of 2012 the coffee production complying with the requirements of voluntary sustainability standards reached about 72 million bags of 60 kg, a share in global production of 50% (Panhuysen and Pierrot 2014, ICO 2015) and it is expected that by 2015, nearly 40% of the global exports will cover aspects of speciality markets and aspects related to sustainability issues (Giovannucci, Scherr et al. 2012, ITC 2012).

Although there are important discrepancies about the size and value of the specialty and sustainable market in world coffee consumption, it is a fact that it has been growing many times more than that of conventional coffee at around 2.5%. Based on Giovannucci et al. in 2006, exports to all destinations of green coffee amounted to 91.6 million 60 kilo bags, from which differentiated type of coffee included certified sustainable and speciality coffee comprising 4% and 6% respectively (Giovannucci, Liu et al. 2008).

By the end of 2010, the export of green coffee amounted to 96.6 million 60 kilo bags, which after adjusting for multiple certification, 9% of coffee sales globally were certified (Giovannucci, Scherr et al. 2012, Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012) and around 13% had some specific characteristics or differences on its physical quality that are appreciated by consumers, see Figure 4.9. As sustainable labels proliferated and consumers linked certain quality characteristics to specific locations, large corporations have been committed to source its coffee both from sustainable sources (OXFAM 2009, Panhuysen and VanReenen 2012) as well as from particular locations that are preferred by consumers. If the current trends continue, it is expected that by 2015, nearly 40% of the global exports will cover aspects of speciality markets and aspects related to sustainability issues (Giovannucci, Scherr et al. 2012, ITC 2012).

Figure 4.9 Growth of sales of sustainable certifications and specialty coffee



Source: Author's own calculations based on (Giovannucci, Liu et al. 2008a, Giovannucci, Scherr et al. 2012, Panhuysen and VanReenen 2012, Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012).

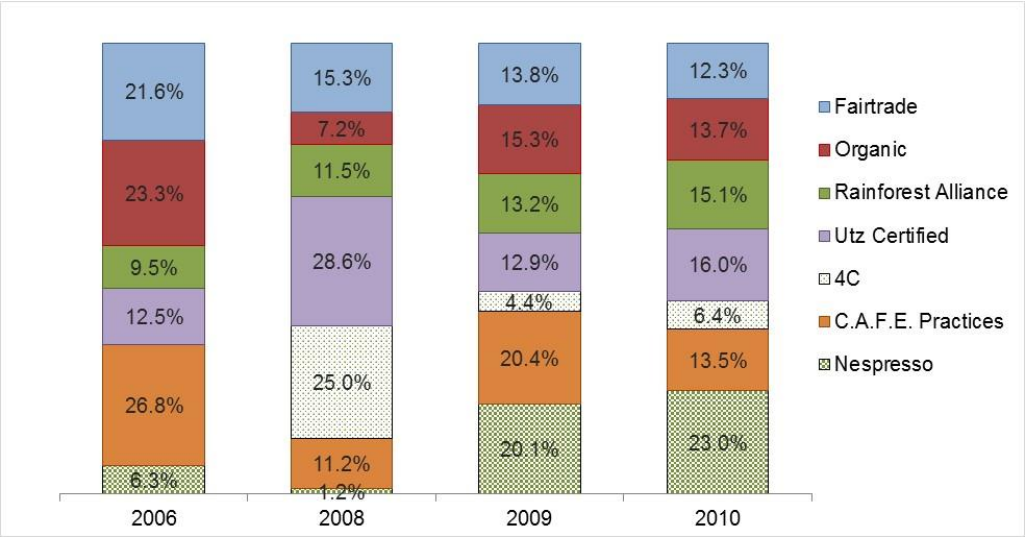
Almost all the worldwide sustainable coffee production and sales quantified is labelled by seven key initiatives (Giovannucci, Liu et al. 2008a, OXFAM 2009, Potts, Van der Meer et al. 2010, Pierrot, Giovannucci et al. 2011, Panhuysen and VanReenen 2012). Including, in first place, the four major collective coffee sustainable standards that are third party independently monitored and certified: as are the Fairtrade Labelling Organisations International - FLO, the earliest labelling schemes in the coffee sector (founded in 1988 under the Max Havelaar label), the International Federation of Organic Agriculture Movements (IFOAM) – the coffee standard launched in 1995, the Rainforest Alliance (RA) – the coffee standard launched in 1995, and the recently emerged Utz Certified, outlined above and benchmarked to the GlobalGAP food safety certification programme since 2005 (Courville 2008). Fairtrade is dominant in the United Kingdom and France, and now in the USA. Rainforest Alliance is a leader in Japan and also important in Western Europe. Utz Certified coffee is dominant in the Netherlands and holds a strong position in several northern European markets. Organic coffee is more important in Germany, Canada, Australia, Italy and the USA (Pierrot, Giovannucci et al. 2011).

Added to this group, there are three verification systems of which codes of conduct have been developed by coffee market leaders. The first one is the multi-stakeholder initiative named the Association of the Common Code for the Coffee Community (4C). This initiative was founded in 2006 by stakeholders from coffee producers, trade and industry, NGOs, trade unions, research institutes and other experts, with the main aim of improving livelihoods across conventional coffee supply end embed sustainability principles in the mainstream coffee industry (Neilson and Pritchard 2007). The emergence of this initiative has been subject of debate as the sustainability strategies of their members differs substantially (Muradian and Pelupessy 2005, Panhuysen and

VanReenen 2012) and the validity of this initiative remains questionable (Neilson and Pritchard 2007).Then are other two important private sector initiatives that have developed firm-specific codes of conduct or verification systems, which have incorporated a set of basic socio-economic and environmental standards along with quality requirements and parameters. These are Starbucks' Coffee and the Farmer Equity Practices Programme (C.A.F.E. Practices) created in 2004 in collaboration with Conservation International and other stakeholders, and the initiative from the sustainable division of Nestlé, the so-called Nespresso and its Nespresso AAA Sustainable Quality Programme that was publicly introduced in 2005 in collaboration with the Rainforest Alliance. Along with these main initiatives, there has been a proliferation on private labels of which the Sustainable Agriculture Initiative (SAI) Platform Guidelines on Coffee deserves a mention, "a collaboration between major food processors and traders, which aims to share learning and establish industry benchmarks for sustainable production in agriculture" (Potts, Van der Meer et al. 2010: 67) and the Neumann Coffee group's sustainable standards (Courville 2008). The last section of this chapter and Appendix 6 describes the main features of sustainable coffee certifications and verifications.

Figure 4.10 below illustrates the worldwide share of purchases of coffee certified or verified as sustainable for each one of the most important initiatives for the period between 2006 and 2010. Based on data from several sources and extrapolations from data sales, this segment has been growing consistently and has experienced significant market penetration (Giovannucci, Liu et al. 2008, OXFAM 2009, Potts, Van der Meer et al. 2010, TransFair USA 2010, Pierrot, Giovannucci et al. 2011, Nestlé-Nespresso 2011d). In the first group of fast growth are those initiatives authored by major branded coffee companies and prominent companies of retailers who adopt sustainable sourcing guidelines, such as are 4C and Nestle with Nespresso including its so called Nespresso AAA Sustainable Quality Programme – 321% and 878% respectively. In the second group were those labels such as Utz Certified and Rainforest Alliance – 239% and 324% respectively. The third group are composed both by more stringent and traditional standards such as Organic and Fairtrade – 57% and 52% respectively, and the initiative created by Starbucks, C.A.F.E. Practices with a growth rate of about 34%.

Figure 4.10 Worldwide shares of sustainable coffee sales by seal, 2006-2010



Source: Author's own calculations.[28]

The fast-growing demand of sustainable coffee that addresses social, environmental and economic issues at farm level could be explained using two reasons. In the first place, by the interest and stronger involvement of larger commercial actors as retail food service chains, mainstream supermarkets and most of the large roasters and retailers to source their mainstream product lines from producers linked to the market of third party certified sustainable coffee. (Giovannucci, Liu et al. 2008a, OXFAM 2009, Potts, Van der Meer et al. 2010, Pierrot, Giovannucci et al. 2011, Panhuysen and VanReenen 2012)

In this sense, for example, as certifications' systems such as Rainforest Alliance and Utz certified have gained credibility and acceptability, they have increased their participation to around one third of the market of sustainable coffee thanks to their ability to negotiate supply arrangements with very large transnationals in the roasting market such as Douwe Egberts, Kraft and Sara Lee, food chains as McDonalds, Dunkin Donalds or IKEA's restaurants. Meanwhile, and despite the establishment of some strategic alliances, traditional standards such as Fairtrade and Organic have shown lower growth rates compared to the new generation of sustainable coffee certifications and their market share has been diminishing since 2006 to reach in 2010 from almost one half to around one fourth of the market of sustainable coffee, Figure 4.10 above.

[28] Data from Fairtrade, Organic, Rainforest Alliance and Utz Certified (Pierrot, Giovannucci et al. 2011); (OXFAM 2009); (Panhuysen and van Reenen 2012). Data from Nespresso and Nespressso AAA Quality Program come from several sources: data from 2006 (Giovannucci, Liu et al. 2008a); data from 2008 (OXFAM 2009) and data from 2009 and 2010 were extrapolated from data sales (Nestlé-Nespresso 2009e; Nestlé-Nespresso 2011d; Nestlé-Nespresso 2012). Data from the C.A.F.E. Practices programme from Starbucks (Giovannucci, Liu et al. 2008a) and (Starbucks 2012).

In second place, propelled by the growing demand for quality coffee, it is necessary to mention the growing participation of private company initiatives such as the Starbucks' programme C.A.F.E. Practices – despite its fall in participation in 2010, and the the Nespresso AAA Sustainable Quality Programme from Nestlé. Purchases from these two company verification schemes have been growing steadily and have reached a dominant market position in several producing countries as represented by over one third of sustainable coffee trade worldwide in 2010, Figure 4.10.

4.4.2 Features from the supply side of the specialty industry

The overall picture of the global supply of sustainable certified coffee has changed radically in one decade, from scarcity to an increasing oversupply (Potts, Van der Meer et al. 2010, Panhuysen and VanReenen 2012, Panhuysen and Pierrot 2014, Potts, Lynch et al. 2014). Data revealed that in 2008 around 49% of the standard compliant production within the seven most important initiatives was effectively sold as compliant on the coffee market, this share was 45% in 2010 and 31% in 2012 (OXFAM 2009, Panhuysen and VanReenen 2012, Panhuysen and Pierrot 2014). Additionally, certified and verified production represent a significant portion of global production, in 2010, standard compliant production was around 22% of global production and there was almost a 2:1 relationship between the coffee produced as certified sustainable and the coffee that was sold under a sustainable seal – 16 million bags of 60 kilograms against 9.1 million bags respectively. Meanwhile, in 2012 the production of verified and certified coffees share in global production was 50% and the relationship between produced and sold was 3:1 – 73 million bags of 60 kilograms produced against 22.4 million bags sold (Panhuysen and VanReenen 2012, Panhuysen and Pierrot 2014, ICO 2014a). This situation has been already reported in a local context for Uganda's Fairtrade coffee market (Ponte and Kawuma 2003, Daviron and Ponte 2005), Mexico's and Central America's certified market (Mendez et al. 2010, cited by Ruben and Fort 2012), for Colombia's sustainable coffee market (Flórez 2010, González 2010) and Peru's market (Ruben and Fort 2012).

The main reason to explain this situation relates to the millions of coffee growers that have entered sustainable production during the last decade, motivated by the farmers' expectations of improving their economic and social viability by obtaining substantial price differentials, higher incomes and potential future markets.

Additional to this, there is the fact that not all the harvest meets the quality requirement criteria imposed by the buyers, and therefore a portion of a farm's harvest must be sold as conventional. Also, buyers may require purchasing only one fraction of the coffee production as certified, even though the entire farm is certified (Giovannucci, Liu et al.

2008a). In some cases, also, buyers can purchase certified coffee for its attributes, but can sell it without the identity of the certification (Giovannucci, Liu et al. 2008a).

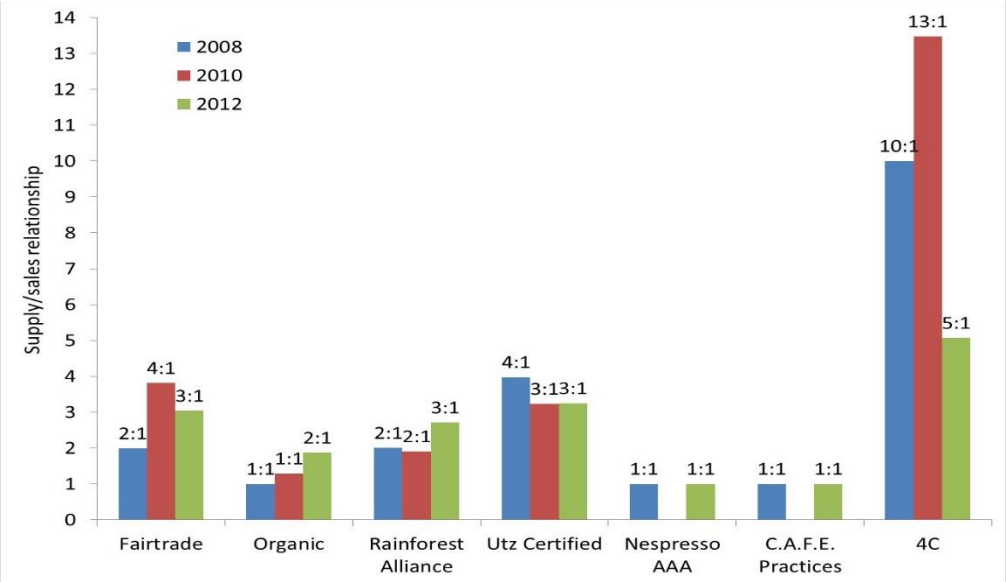
However, there are important differences in the relationship between the coffee produced and that sold among the most important sustainable initiatives, see Figure 4.11. For example, in 2008, only one tenth of the coffee produced under the verification of the Common Code for the Coffee Community (4C) was actually sold under this label, one fourth of the coffee UTZ Certified, and 50% of the coffee produced under the Fairtrade certification was sold as certified (OXFAM 2009). By contrast almost all the coffee that met the quality requirements for the Nespresso AAA Quality Programme, C.A.F.E. Practices and Organic was sold as verified and certified.

The same trends continued during 2010 and 2012 (Potts, Van der Meer et al. 2010, Panhuysen and VanReenen 2012, Panhuysen and Pierrot 2014, Potts, Lynch et al. 2014) as the available production volume of certified and verified coffees continued growing and the gap between the coffee purchased has become even greater for some initiatives. For example, in the case of the 4C, only 7% and 20% of the certified production was sold as such in 2010 and 2012, respectively – in terms of bags of 60 kilograms produced and sold a ratio of 13:1 and 5:1 respectively. This imbalance between produced but not sold also grew for Fairtrade and Rainforest Alliance certifications. Only 36% and 33% of the Fairtrade certified coffee was sold as such and 53% and 37% of Rainforest Alliance in 2010 and 2012 respectively (Panhuysen and VanReenen 2012, Panhuysen and Pierrot 2014). In this sense, although the sales of most common sustainable initiatives has witnessing growth well beyond the average annual growth rate of conventional coffees, this rate is below the annual growth in production.

Evidence has signalled that oversupply is good for exporters and importers as they can choose between many different kinds of coffee, creating more demand for quality, tastes and certain origins (Ponte and Kawuma 2003, Panhuysen and VanReenen 2012) while ensuring an adequate level of security in order to comply with the buyers demands (Flórez 2010, González 2010).

However, this situation is not good for producers as it could imply a decline in producers' rents. If producers cannot sell their entire production as certified even though the whole farm is certified, and receive a premium, they have to sell their remaining production to the conventional market without adding any value or premium to their coffee. As such, the contribution of sustainable standards and certifications to improve the livelihoods of coffee producers could be limited (Ruben and Fort 2012).

Figure 4.11 Relationship between certified supply and certified sales 2008; 2010 and 2012



Source: Author's own calculations based on (OXFAM 2009, Panhuysen and VanReenen 2012, Panhuysen and Pierrot 2014)

Additionally, oversupply in the medium term exerts a downward pressure over the farm gate prices of sustainable coffees (Lewin, Giovannucci et al. 2004, Muradian and Pelupessy 2005, Neilson 2008), which recently happened with the sustainable prices in the Colombian market (see Figure 5.13 at the next chapter). In this regard, although there is a fact that one of the main motivations for coffee growers participating in these programmes refers to the possibility of guaranteeing higher prices for their coffee, for the current oversupply it's prudent to de-emphasise price premiums as a reason for entering these markets (Lewin, Giovannucci et al. 2004) as this can do little to improve the farmers' economic situation (Kilian, Jones et al. 2006).

In this sense, under the current situation of oversupply, lower price premiums and significant higher production costs per hectare associated with the sustainable production and compared with conventional production (see Chapter 7), means that producers will only improve their rents through gains in efficiency, improved crop quality, increase in production and controlling farm costs (Kilian, Jones et al. 2006). In the opposite situation, as described above, it is clear that the markets for these products should be approached with caution since they are still limited and could affect the producers´ relationships with the market as well as the type of coffee (parchments, wet or cherry) they sold to the market.

One additional option for farmers to sell their coffee and recoup both the production and certification costs and get some profits is to adopt multiple certifications. Evidence indicates that the adoption of multiple standards and certifications' system at the farm

level (double and triple certification) has been one of the strategies that producers have followed to overcome the gap between sales and production of certified coffees. Multiple standards' compliance could be seen as a strategic issue, not only to reduce the risk of relying on a single scheme but also assuring a higher income through price premiums and access to new and more developed markets. Hence, by selling more of their coffee to the sustainable segment farms, they look for assuring higher price premiums in order to recoup the production and certification costs and make some profits (Potts, Van der Meer et al. 2010).

According to global statistics, the most common cases are found in Fairtrade and organic double certification (Ponte and Kawuma 2003, Ponte 2004, Daviron and Ponte 2005). In this sense, Potts et al. (2010) have estimated that 48% of the total sustainable sales of organic in 2009 was also Fairtrade (Potts, Van der Meer et al. 2010, based on estimates from Pierrot, Giovannucci and Kasterine, 2010, the CBI Monitor, TCC Coffee Barometer and personal communications with standards bodies). This combination is broadly accepted by consumers, roasters and major retailers in North America as well as Europe as they have been demanding this double certification (Giovannucci, Liu et al. 2008a). Double certification during 2009 for other initiatives was estimated in the following way: for Organic and UTZ, the estimate was 5%; Organic and Rainforest, 15%; and 4C with all of the other initiatives, 25%.

The economic implications of meeting multiple standards and certifications are contested. On one hand, some evidence has noted that this trend, although implying higher costs and additional financial resources, seems either to build some economies of scale and gain some efficiencies at farm level or expand farmers' opportunities by improving access to new markets (Ponte and Kawuma 2003, Ponte 2004, Giovannucci, Liu et al. 2008a, Pierrot, Giovannucci et al. 2011). Additionally, some producers find it easier to sell their coffee to certain cooperatives or private buyers if they are certified with some label in particular. However, evidence also revealed that producers do not have to pay either the certifications or audit cost as private exporters and producers' organisations not only can afford these costs but also give them significant levels of aid in kind.

However, on the other hand, multiple certification could create incentive distortions and market inefficiencies as this practice could privilege more advanced producers and deviate resources that could be directed towards farmers seeking first certification (Pierrot, Giovannucci et al. 2011, Panhuysen and VanReenen 2012). This situation can exclude the most vulnerable producers, in particular, small farmers who face many challenges and difficulties in meeting the demands or coordination requirements of private standards for a start (Neilson 2008, Giovannucci, Liu et al. 2008a). This is not only because the costs associated with its adoption are substantial for any producer, but it

varies inversely with the size of the farm and the expected revenue could not compensate for the cost of meeting the standards in the smaller farms due the size of the operations (Potts, Opitz et al. 2007) but also because downstream actors could favour those producers who can meet their demands for standards, large volumes, and year-round consistency (Daviron and Ponte 2005, Giovannucci 2008).

Although most common requirements are shared among the different certifications and verifications programmes, such as keeping records, traceability and good agricultural practices, individual requirements of the different standards implies carrying out different practices and also keeping separate sets of records (Pierrot, Giovannucci et al. 2011, Panhuysen and VanReenen 2012). Multiple certification (double or triple) not only implies additional costs and the highest levels of complexity for farmers (Fairtrade, SAN/Rainforest Alliance et al. 2011) that have led them to wasting resources, money and time but also have made it more difficult for government agencies to track production and trade (Giovannucci, Liu et al. 2008a) and for consumers to take decisions about sustainability issues (Courville 2011). Additionally, it makes it more difficult for policy makers, other decision-makers and researchers to attribute the outcomes and impact of the adoption of one sustainable initiative in particular (Potts, Van der Meer et al. 2010).

This situation has motivated the ethical trade initiative, the International Social and Environmental Accreditation and Labelling Alliance (ISEAL), to promote either harmonisation and cooperation between various certifications programmes (Giovannucci, Liu et al. 2008, ISEAL 2011) and work with the most important third party certifications' organisations to counteract the vast amount of trade that is uncertified (ISEAL 2011). The outcome of this effort is a joint statement signed by representatives of Fairtrade, the Sustainable Agriculture Network (SAN)/Rainforest Alliance and UTZ CERTIFIED, that publicly acknowledge their aligned mission to work "together to reduce the level of complexity and costs for farmers" and "to create more efficiencies and clarity for producers" (Fairtrade, SAN/Rainforest Alliance et al. 2011, ISEAL 2011). However, there is still a long way to go as these "umbrella initiatives" can exclude other sustainable labels that are developed in different ways (Courville 2011). In terms of the coffee producers´ point of view, field work interviews revealed that harmonization across the proliferation of standards systems would help to achieve a more sustainable production and clearer market conditions. However, in the short run the success of this initiative in unlikely as certifications systems represent a form of governance for those actors downstream the coffee value chain.

One example of how difficult would be the way towards harmonization in represented by the decision of Fair Trade USA (previously known as TRANFAIR USA) to separate and resign to the Fairtrade Labelling Organisation (FLO) at the end of 2011, just a couple of

months after it signed the aforementioned joint statement to promote harmonisation. According to the Latin American and Caribbean Network of Small Fair Trade Producers (CLAC) the main idea from Fair Trade USA now is to pursue other visions of sustainable business with space for the certifications of plantations and contract production of certified products. CLAC claims that Fair Trade USA´s decision not only excluded producer organizations from the decision-making process but also its expansion towards plantations and producers who do not form part of organisations, would lead to an oversupply and the threaten of the small organized producers (CLAC 2011).

4.4.3 Main features of sustainable coffee certifications and verifications

While the mainstream model is associated with procurement practices in which coffee firms procure in bulk, seek to minimise costs and disclose as little information as possible to consumers (Daviron and Ponte 2005), in contrast, procurement in the differentiated coffee business model means a closer and sometimes direct relationship with a roaster or buyers rather than being traded in bulk or via the commodity markets. Appendix 6 describes the main features of sustainable coffee certifications and verifications.

An important feature of sustainable coffee certifications' and verifications' programmes refers to its main objectives and scopes. While some are looking to find a balance between the fulfilment of social, environmental and economic benefit to farmers, other have incorporated parameters of quality and origin in its requirements. In particular, it is supposed that each standard-setters is intended to contribute in a different manner to worldwide socio-economic and environmental sustainability (Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012). However, the degree to which a certification standard and its associated set of practices impact social sustainability at the household level could be notably different across certification programmes, and as a such, all areas of impact among initiatives cannot be weighted equally (ISEAL 2010).

It is known that programmes have put emphasis on social issues in varying degrees according to its mission, market focus and scope (Raynolds, Murray et al. 2007, Potts, Van der Meer et al. 2010, SCAA 2010, Lebel 2012). In fact, while social and economic standards are important for schemes such as Fairtrade (Lebel 2012) and cover only basic environmental criteria (Raynolds, Murray et al. 2007), other certifications such as Organic and Rainforest Alliance have paid more attention to environment standards while social standards "are in fact weak and voluntary" (Raynolds, Murray et al. 2007: p. 154). Meanwhile, certifications such as Utz Certified put emphasis on management aspects of the farm in order to increase economic sustainability.

Authors have mentioned that social criteria in sustainable schemes tend to focus mainly on the compliance with key International Labour Organization (ILO), labour conventions and national labour legislation, regarding fair treatment and good conditions for temporary workers as well as those criteria and conditions dealing with health and safety, no forced or child labour, minimum social and labour conditions, and the rights to safe and healthy working conditions, among others (Raynolds, Murray et al. 2007, Potts, Van der Meer et al. 2010, Lebel 2012).

Regarding this fact, in a qualitative comparative analysis of five third party sustainable initiatives in the coffee sector - Fairtrade, Organic, Utz Certified, Rainforest Alliance and Bird Friendly, Reynolds et al. (2007, p. 157) emphasised that in the "social arena' there are business friendly certifications driven by the retailers' interest and its corporate responsibility approaches (Lebel 2012). Here, for example, in the case of the social conditions of the coffee growers, some standards just want to *hold the bar,* meanwhile there are other initiatives that are raising the bar as these follow an increase in social standards going beyond ILO conventions and existing labour and safety laws by supporting both price and contract requirements as well as producer organisations.

In general terms for all the programmes, producers should bear several types of direct and indirect costs involved with standards compliance and meeting certifications requirements, see Table 4.2 (Jaffee and Henson 2005, Humphrey 2006a, Potts, Opitz et al. 2007, Kaplinsky and Morris 2008, Henson, Jaffee et al. 2009). These costs can be divided into at least four categories (Potts, Opitz et al. 2007). Firstly, there are transition costs, which in turn can be broken into three sub-categories: a) the costs associated with the conversion process such as the training costs to obtain knowledge about standards and certifications; b) the capital cost for adjusting the production systems and investing in production facilities, buildings and physical equipment, among others; and c) the management systems implementation cost needed to assure quality assurance and traceability (Humphrey 2006a, Giovannucci and Purcell 2008, Humphrey 2008). Secondly, there are the certification costs and fees which are expended in order to keep the status of certified within one or another programme (Potts, Opitz et al. 2007). Thirdly, there are the maintenance expenses which include the recurrent and non-recurrent costs of compliance such as the cost of inspections and independent verification, and certifications and monitoring, as well as the investment in protective clothing and gear for agrochemical use, among others (Potts, Opitz et al. 2007). Fourthly, there is the opportunity and intangible cost, which are represented by those associated with the confusion about the types of standards and their specific requirements.

In some cases, the cost of certification and the annual audits can be afforded by export companies, some cooperatives (if producers sell their production afterwards), as well as some NGOs and aid agencies are implicated not only in helping farmers to get the

certification, paying the cost (even if they are double or triple certified) as well as the annual audits, also give aid in kind in order to help farmers to meet the competitive requirements imposed by the certifications and verifications programmes. Although this situation does not operate for coffee farmers selling to the Nespresso AAA Sustainable Quality Programme from Nestlé and Starbucks' Coffee or the Farmer Equity Practices Programme (C.A.F.E. Practices), who currently do not have to pay for verification and adherence to the programme, they have funded and leveraged resources for providing both training, extra technical assistance and equipment to help farmers to meet the challenge of conforming their standards.

About the price premium paid by buyers, Oxfam (2009) have pointed out that the premium received from selling Rainforest Alliance and Utz Certified depends on market fundamentals, which implies a strategic balance between supply and demand. In the case of the Fairtrade certification, all coffee purchased under this initiative has a Fairtrade price floor, and receives the social premium set by FLO. This is despite the fact that a social premium is guaranteed as well as an obligation from the buyers to pre-finance the costs of production (Potts et al., 2007).

Table 4.2 Cost related to the implementation of standards

Transition cost	Training cost	Cost of acquiring the technical know-how, managerial skills and knowledge about standards and certifications
	Capital investment cost	Cost for adjusting the production systems and investing in production facilities, investments in technology and better infrastructure and physical equipment,
	Management System Implementation Costs	Costs are associated with the documentation and management of criteria fulfilment
Certification cost and fees	Expenses incurred in order to keep the status of certified within one or another programme	
Maintenance cost	Expenses include the recurrent and non-recurrent cost of compliance for the cost of inspections and independent verification, and certifications and monitoring, as well as the investment in protective clothing and gear for agrochemical use, among others	
Opportunity and intangible cost	Confusion about the types of standards and their specific requirements are an intangible cost	

Source: Author's adaptation from (Humphrey 2006a, Potts, Opitz et al. 2007)

Different factors are taken into account regarding the requirements for implementing each one of the certifications and verifications. While in the case of producers of Fairtrade certification, Oxfam ensures that the entry requirement for new producer

groups are difficult, it stresses that there are low entry levels to producers who want to sell their coffee to the Starbucks' C.A.F.E. Practices Programme (OXFAM 2009). However, regarding the Nespresso AAA Programme it indicates that being part of this programme is possible only if producers are located in specific regions in which coffee qualities offer specific characteristics. This situation, based on field work interviews, has made it possible to build significant long-term relationships between producers and buyers who also are interested in the implementation of programmes to improve coffee quality and assure loyalty from farmers through higher price premiums and helping them to comply with more difficult requirements.

An additional factor corresponds to the traceability systems and supply chain coverage that each of these schemes have implemented along the value chain. While labels such as Rainforest Alliance focus its activities in assure compliance with sustainability standards on the part of producers, others such as Fairtrade, Utz Certified Nespresso AAA also work to ensure that the entire supply chain follow rigorous monitoring protocols, based primarily on sophisticated traceability and chain of custody.

4.5 Value-added initiatives in coffee Global Value Chains

Adding value and differentiating through credence claims can be initiated by three different actors at least in the coffee value chain: First, by corporate and industrial firm initiatives implementing commercial strategies through the development of firm-specific corporate codes of conduct or private voluntary standards - "differentiation from above"; second, by local producers and their institutions through marketing and branding strategies linked both to authenticity of origin or relating to social and environmental impact - "differentiation from below"; and third by trading partnerships between Alternative Trade Organisations and producer-driven labelling and certification initiatives -"differentiation from the middle", see Table 4.3.

Table 4.3 Different types of differentiation in the coffee sector

Branding or differentiation from "above"	Branding of differentiation from the "medium"	Branding of differentiation from "below"
C.A.F.E. Practices, Starbucks	Fairtrade	Blue Mountain Coffee, Jamaica
Nespresso AAA Sustainable Quality Programme, Nestle	Organic	Antigua Coffee, Guatemala
	Rainforest Alliance	Kona Coffee, Hawaii
	Utz Certified	Café de Nariño, Colombia
	Bird Friendly	Café Veracruz, Mexico

Source: Author's adaptation from (Humphrey 2005, Humphrey 2006b)

4.5.1 Differentiation from above

The first correspond to those initiatives of product differentiation designed and launched by big brands, large international roasters, and retailers and traders located in developed countries, which have been called 'branding [or differentiation] from above' (Humphrey 2006b: 579, Lee, Gereffi et al. 2012). As a competitive strategy to participate in the new segments of the market, corporate lead firms have created their own private standards, verification, codes of conduct and certifications' systems in terms of sustainability, food safety and quality (Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012). These strategies of product differentiation through credence claims have been propelled by three facts: to increase their power, to improve their brand image against their competitors.

In first place, mainstream roasters normally embedded in the selling of conventional coffee through different brands have shown their interest in capturing a bigger market share of the rapid growth of the speciality industry and growing sales of differentiated coffee in the mature markets of the United States, European Union and Japan. Since the beginning of the 1990s, NGOs and development agencies have driven certifications such as Fairtrade, Organic, Rainforest Alliance or Bird Friendly certification, which have gained an important share in the differentiated market against the roaster sector – "differentiation from the middle." As result, at the turn of the century, a more deeply corporate engagement with the speciality coffee agenda took place as certification systems gained wider acceptability (Daviron and Ponte 2005, Ponte and Gibbon 2005, TransFair USA 2010).

In second place, the corporate interest to gain credibility for wealthy consumers concerns about the coffee production conditions (Muradian and Pelupessy 2005, Raynolds, Murray et al. 2007), in particular, environmental and socio-economic considerations (Alvarez 2010). As Neilson (2008) pointed out "with the increased importance of the symbolic quality of coffee products, leading brands could not afford to be associated with allegations that they were perpetuating third-world poverty or contributing to serious environmental degradation" (Neilson 2008: 1608).

However, there are differences in the competitive strategies that mainstream and differentiated coffee roasters, retailers, processors or traders have designed to participate and engage in the new market segments of the specialty coffee industry. According to Neilson (2008) there are three intersecting mechanisms about how lead firms can be involved in the specialty coffee sector and the sustainable coffee agenda: "(i) adoption of NGO-certified fairtrade and ecologically sound coffee as specific ''niche'' product lines; (ii) the development of firm-specific corporate codes of conduct, and (iii) an agenda to work towards collective, industry-wide private standards" (Neilson 2008:

1608). While the first alternative refers to the corporate use of labels backed by third party certification bodies, jointly with their brands, the second process deals with the use and appropriation of ethical and environmental credentials by being part of an increasing number of major coffee roasters and retailers through the initiation of several first and second party certifications and implement defensive branding management (Neilson 2008) to "ward off possible negative publicity, and capture a share of the growing sustainable coffee market" (Raynolds, Murray et al. 2007: 151).

Regarding the development of company-specific codes of conduct in the coffee industry, many coffee corporations have established their own internal code of conduct or verifications' systems related to environmental, social attributes of production and quality issues (Raynolds, Murray et al. 2007, Neilson 2008). The most known and active individual private codes are those developed and implemented by bigger players in the coffee industry such as Starbucks, the world's single largest roaster and retailer of sustainable coffee (TransFair USA 2010) and Nespresso, the speciality coffee division, one of Nestle's fastest-growing subsidiaries (Giovannucci, Liu et al. 2008a, Pierrot, Giovannucci et al. 2011). Although both initiatives do not work as a certification scheme (it is verification-based) these companies have been adopting their internal codes of conduct and sustainable sourcing standards for quality and sustainable coffee production for the so-called Coffee and Farmer Equity Practices programme (C.A.F.E. Practices) and the Nespresso AAA Sustainable Quality Programme (Raynolds, Murray et al. 2007, Giovannucci, Liu et al. 2008a, OXFAM 2009, Giovannucci 2010, Pierrot, Giovannucci et al. 2011). Although these two verifications are not a certification scheme as they are not third certified, the verification of compliance and monitoring is done by private certifiers approved by the initiative (C.A.F.E. Practices) or by member organisations (Nespresso AAA Sustainable Quality Programme).

One important fact about these two initiatives relates to its rapid growth, added to its considerable buying power (Giovannucci, Liu et al. 2008a, Pierrot, Giovannucci et al. 2011), and particularly its impact on several thousands of farmers and cooperatives in more than two dozen countries in the case of C.A.F.E. Practices and six countries for Nespresso (Giovannucci and Potts 2008). These companies as such are exerting a greater influence on value chain structures and have reached dominant market positions in several producing countries (Neilson 2008, FNC 2009b, FNCa 2010). The Nespresso programme, for example, is Nestlé's fastest growing division that incorporates brewing equipment to its single-cup method, was created during the middle of the 1980s, and has been growing an average of 30% since 2000 (Porter and Kramer 2011), until it reached overall global sales of USD 3.8 billion in 2010 (Nestlé-Nespresso 2011d). In 2008, around 13,000 metric tonnes were sourced through the Nespresso AAA Sustainable Quality™ Coffee Programme (OXFAM 2009), which accounted for 40% of the Nespresso's total purchases in 2008 (Nestlé-Nespresso 2011a, Nestlé-Nespresso 2011b,

Nestlé-Nespresso 2011d). At the end of 2010, more that 60% of Nespresso's coffee was sourced from around 40,000 AAA programme farms in Costa Rica, Colombia, Guatemala, Mexico, Brazil and Kenya (Nestlé-Nespresso 2009b, Nestlé-Nespresso 2009c, Nestlé-Nespresso 2011b, Nestlé-Nespresso 2011d).

There are also other fast growing sustainable initiatives such as the Common Code for Coffee Commodity (4C). This company code, created and launched in Germany in 2006, by the German Coffee Association, got the support of roasting firms and traders, including Kraft, Nestle, Sara Lee, Tchibo, Neumann Gruppe, and Volcafe (Neilson 2008, Giovannucci, Liu et al. 2008a, Pierrot, Giovannucci et al. 2011). It seeks to verify farm practices and encourages good basic agricultural and management methods and includes minimum social and environmental standards. It differs from certification in that it is a check on the correctness of the self-assessment completed by the farm or group and not an independent assessment (Neilson 2008, Giovannucci, Liu et al. 2008a, OXFAM 2009, Pierrot, Giovannucci et al. 2011). Meanwhile other roasters have been experimenting with premium products. Sara Lee, Tchibo, Lavazza, Illy Coffee or Procter & Gamble have even been involved in cooperation programmes with coffee traders like Neuman, Volcafe and Ecom (OXFAM 2009). However, the gross of these corporate initiatives promoted as part of the CSR-policy focused on procuring more sustainable coffee lacking independent third-party verification systems (OXFAM 2009, Leibovich, García et al. 2010).

4.5.2 Differentiation from below

The second strategy for adding value and differentiating coffee products through credence claims can be created by developing country producers through programmes linked to authenticity of coffee origin and geographic conditions of production, or relating to a social and environmental impact, which has been called 'branding [or differentiation] from below' (Humphrey 2006a, Humphrey 2006b, Lee, Gereffi et al. 2012). Changing market trends, including new consumer patterns have implied that the growing number of consumers are likely to pay higher price premiums not only because they want to be socially and environmentally responsible, but also because they derive satisfaction for quality brands which warrant that a particular coffee comes from a specific geographical origin (Kaplinsky and Fitter 2004, Giovannucci, Josling et al. 2009, Lozano, Samper et al. 2012). So, while roasters gain from brands and blends of replaceable low-cost beans, coffee producers' might gain from the ability of consumers to recognise and appreciate the varied tastes of a cup profile of coffee provided by the origin and the conditions under which coffee is grown (Kaplinsky and Fitter 2004, Kaplinsky and Morris 2008).

Under these circumstances, producer-driven options that promote the valuable attributes of quality and flavour characteristics of a geographical origin – for example: regional branding initiatives, geographical indications, appellations programmes, certification schemes, labels or trademarks names (Kaplinsky and Fitter 2004, Lewin, Giovannucci et al. 2004, WIPO 2007), have emerged as an option available to enhance producer income (Duguid 2003, Humphrey 2005, Giovannucci, Josling et al. 2009, Hughes 2009). As certain origins of coffee may be highly prized and attract high premiums (ITC 2002, Giovannucci, Josling et al. 2009), developing countries can establish a brand identity in global markets (Daviron and Ponte 2005, Humphrey 2005, Hughes 2009) by promoting the "the consumption of place" and the symbolic quality attributes linked to a specific location (Daviron and Ponte 2005: 75). And in this way, reaching consistent demand, longer-term contracts, reduced price volatility and higher prices (Giovannucci, Josling et al. 2009), support wider rural development (Neilson 2007) and reduces poverty through trade (Giovannucci, Josling et al. 2009).

Some anecdotal evidence has indicated that product differentiation through quality attributes associated with a place could generate more stable returns and rents compared to those economic benefits accruing from certified sustainable coffee (Lewin, Giovannucci et al. 2004, Muradian and Pelupessy 2005). The rewards accruing to farmers investing in quality improvement through certified sustainable coffee may be less than expected in the medium term as the price premiums paid for quality may erode over time due to oversupply once competition increases (ITC 2002, Muradian and Pelupessy 2005, Neilson 2007, Giovannucci, Liu et al. 2008a), and the compliance cost for certifications become higher (Mutersbaugh 2005). In this regard, Anholt (2003) has pointed out that efforts towards product branding using regional identities could shape the distribution of wealth within value chains and, in this way, work as a tool for economic development for local producers and their communities in developing countries (Anholt 2003). By launching marketing instruments, in some way, similar to a brand name (Daviron and Ponte 2005) like a single origin or Geographical Indications of Origin, producers (at various levels - producers associations, traders, NGO, intermediaries, exporters, firms, group of firms, regions or countries, etc) can create differences in the opinion of the consumers and make it possible to improve their access to global markets, while moving "outside the commodity box" and escape away from the trap of low commodity prices (Lewin et. al. 2004 cited by Humphrey 2006a, Neilson 2007).

In this way, producers develop competitive advantages and raise barriers to entry against producers who do not have the opportunity to offer a product of the same quality since they do not have the conditions that influence the taste of the final product (Kaplinsky and Fitter 2004). Additionally, producers are able to increase their bargaining power while counteracting and offsetting the effects of market supremacy of the big

players in the industry (Humphrey 2005, Humphrey 2006a, Humphrey 2006b) once consumers learn to identify or recognise the origin rather than the brands created by the mainstream and speciality coffee roasters and blenders. Unlike the case of other differentiation strategies, producers are able to gain economic rents which are the product of innovation by selling their products with its image and quality linked to place (Kaplinsky and Fitter 2004, Muradian and Pelupessy 2005, Ponte and Gibbon 2005, Neilson 2007). In the case of agricultural producers, these instrument of collective differentiation allow communities that produce a good, which have gained recognition and reputation linked to their origin, to lessen the need to compete exclusively through a strategy of mass production and price reduction (Lozano, Samper et al. 2012).

As such, "differentiation from below" as a form of branding might have the capacity to "improve growers position vis-à-vis roasters and traders" (Muradian and Pelupessy 2005: 2031) and hence alter power relationships and the structure of governance within the value chain in the world of agri-business as well as the returns that producers expect to obtain (Bain, Deaton et al. 2005, Humphrey 2005). Traditionally, there have been the large firms of mainstream roasters or traders who owned the brands and in such a way have promoted the quality attributes of the coffee blends. From this perspective, it is unlikely that these companies are willing to reveal in their labels the origin or composition of the blends they sell (ITC 2002, Kaplinsky and Fitter 2004, Neilson 2007). In this regard, Ponte and Gibbon (2005) pointed out that while "quality attributes are owned by branded manufactures or processors", industry efforts would be directed to replace regional geographic appellations or indications by other certified quality systems that "partially de-link quality from place." As such, product differentiation through "branding from below" represents a "form of resistance against this trend" (Ponte and Gibbon 2005: 13-15) and "a challenge [from developing countries] to their [corporate] monopolies and, increasingly, to their use of registered trademarks to secure economic rents in their respective markets" (Neilson 2007: 200). Through embarking on an active strategy of differentiation and marketing its products in the coffee world, producing countries can "take advantage of product rents by promoting the virtues of location-specific 'images and taste' and gain dividends from the product's image (Kaplinsky and Fitter 2004: 18).

Maybe one of the most notable cases from "branding [differentiation] from below" refers to Colombia's active global strategy of differentiation and marketing its product in the coffee world based on the recognition and acceptance of the character of Juan Valdez and the triangular logo of Café de Colombia (Giovannucci, Leibovich et al. 2002, Reina, Silva et al. 2007, WIPO 2007, Hughes 2009, Juglar 2009, The Economist 2010). Recently, in order to protect the Colombian origin, the Colombian coffee authorities have been supporting efforts to get unique regional coffee into the market place through the implementation strategy of Geographical Indication in the European Union,

Denomination of Origin in the Andean Community Countries and Certification Marks in United States and Canada, as well as a trademark in over 140 countries worldwide (Giovannucci and Samper 2009, Lozano, Samper et al. 2012, Samper 2012).

Over time, other countries have embarked on an active strategy of differentiation and marketing its products in the coffee world using regional identities (ITC 2002, Teuber 2007, Giovannucci, Josling et al. 2009, Hughes 2009). Examples include, Jamaica Blue Mountain, Guatemala with the case of Antigua Coffee, the United States and the Hawaii Kona Coffee, Mexico with the Veracruz coffee and the top Kenya AA, and Nariño coffee, from Colombia, among others. Anecdotal evidence has shown that farmers producing these types of coffee have achieved significant and considerable price premiums that were achieved by other growths in the same country (Giovannucci and Easton-Smith 2009, Giovannucci and Samper 2009, Oosterom and Deve 2009, Schroeder and Guevara 2009). For example, in the early 2000s, Jamaican Blue Mountain attracted such a large premium that the unit value of coffee exported from Jamaica was over 13 times higher than the average of all 'other Milds' producers and more than 16 times higher than the average achieved by all origins (ITC 2002). Although, as Schroeder (2009) pointed out, in the case of Blue Mountain coffee from Jamaica, it is also important to have in mind that "high prices must be seen in the context of its very high production costs and considerable climactic risks" (Oosterom and Deve 2009: 176).

Nevertheless, developing and managing successfully global or national brands through producer-driven initiatives such as geographical indications or appellations are particularly challenging and its success requires many years of effort, as well as from resources and participatory efforts from several stakeholders along all the stages of coffee cultivation, processing and sales (Kaplinsky 2004, Kaplinsky and Fitter 2004, Daviron and Ponte 2005, Neilson 2007, Giovannucci, Josling et al. 2009). If the purpose of these instruments is contributing to sustainable rural development by guaranteeing economic benefits for producers, improving their living conditions and capturing a bigger share of the economic benefit of the coffee value chain, at least three fundamental conditions must be completed. In first place, it is vital to take into account the fact that differentiation from below is based on origin attributes and will not, in themselves, lead to an increase in profits and sustainable incomes as long as producers get access to the markets for these goods in terms of distribution (Lozano, Samper et al. 2012). Small producers are limited in their capacity to upgrade within the global value chains of the agri-business sector unless they find necessary allies to gain connectivity and their goods reach highly concentrated markets (Gereffi, Humphrey et al. 2001, Kaplinsky and Morris 2008, cited by Lozano et al. 2012).

Second, some authors agree that a necessary condition for the success of these initiatives is a combination of certain valuable qualities and characteristics that are

entirely due to a geographic origin (ITC 2002, Neilson 2007, Oosterom and Deve 2009, Schroeder 2009, Schroeder and Guevara 2009). This also implies that the relationship between origin and quality must be demonstrated (Lozano, Samper et al. 2012). But this is not a sufficient input, for achieving success and gaining a reputation as there are other conditions that geographic indications' programmes must fulfil. These include, among others, regular delivery, reliable and consistent grading procedures, strict compliance with contractual obligations, long-standing commercial relations, reliable traceability systems from sites of production through to consumption and a scale necessary to conform to market volume requirements.

In third place, additional to these factors, Daviron and Ponte (2005) mentioned that in order to "generate and control [the] extra value for symbolic production" generated by the use of geographical indication, it is necessary the creation of a legal framework to protect the quality sign "against misleading use and against the dilution of meaning" and particularly have "the ability to build vertical alliances with other actors [international buyers] in the value chain" (Daviron and Ponte 2005: 73-79) with the interest to support the development of such producer-driven initiatives and in this way reducing their transaction costs through the information embedded in the geographic indication operating as a brand name (Neilson 2007).

As a consequence, these initiatives do not automatically guarantee economic benefit for producers (Neilson 2007) and are not open to everyone (Kaplinsky and Fitter 2004). The cost of achieving all these requirements can be not only substantial but could also operate against the poorest farmers and their institutions which can be seen as excluded from these differentiation processes (Neilson 2007). For this reason, under some circumstances, the promotion of a differentiation strategy for these characteristics "are by no means a panacea for the difficulties of rural development" (Giovannucci, Josling et al. 2009: xviii). Humphrey (2006) points out that whereas in some cases there have been notable success stories of product differentiation and added value to agricultural products, in other cases the full potential of some strategies to induce producers to move "outside the commodity box" is hard to establish. This situation implies that in order to develop a consistent and coherent strategy linking to the origin, it must include, not only institutional and legal processes, but also business and competitiveness planning processes (Lozano, Samper et al. 2012). Although there are over six million trademarks worldwide, there are only around 10,000 GIs, about 144 of which originate from developing countries. Therefore, GIs represent barely 1% of the total number of trademarks. This enormous gap may be explained by the reasons listed above, as well as by the fact that trademarks are more versatile than GIs (Giovannucci, Josling et al. 2009, cited by Lozano et al. 2012).

However, empirical evidence measuring the outcomes and causal impacts of geographically differentiated products, both on producers' perceived economic, social and environmental benefits as well as global value chains, are non-existent (Rangnekar 2004, Barjolle, Paud et al. 2009, Bramley, Biénabe et al. 2009, Giovannucci, Josling et al. 2009, Jena and Grote 2010, Deppeler, Stamm et al. 2011, Paus and Reviron 2011, Bramley 2012, Jena and Grote 2012). In the near future it remains to be seen whether or not the introduction of geographical indicators or regional identities for coffee will generate increased revenues for farmers (Giovannucci, Josling et al. 2009, Giovannucci and Samper 2009, Hughes 2009, Juglar 2009). In the case of Colombia, for example, coffee authorities have recognised that one enterprise of this size can be very costly to broadly promote a GI directly to consumers unless there are sufficient economies of scale (Giovannucci and Samper 2009).

4.5.3 Differentiation from the middle

In third place are those trading partnerships that have been developed by a combination of different entities such as Alternative Trade Organisations, Non-Governmental Organisations, independent standard setting bodies, industry organisations, consumer activists, civil society organisations and producers (Giovannucci, Liu et al. 2008a), which have been called 'branding [or differentiation] from the middle.' The primary aim of these initiatives was to improve livelihoods, trade, or the environment of producers, most of them small and in disadvantaged conditions (COSA 2013), and create "alternative consumer spaces alongside the mainstream coffee market, offering a means of product differentiation for growers which could be translated into farm-gate price premiums" (Neilson 2008: 1608). In this sense, producers have witnessed the emergence and growing importance not only of corporate voluntary code initiatives – differentiation from above, but also broad certification programmes – differentiation from the middle. In particular, those based on third party inspection and certification of suppliers through environmental and socio-economic standards (Daviron and Ponte 2005, Giovannucci, Liu et al. 2008). As in the case of differentiation from above and below, producer participation in coffee certification is stimulated mainly via higher farm gate price premiums as well as market access and socio-economic and environmental benefits (Daviron and Ponte 2005, Raynolds, Murray et al. 2007).

Examples of such organisations in the coffee sector include the four major collective coffee sustainable standards that are independently monitored and certified: the Fairtrade Labelling Organisation International (FLO), the International Federation of Organic Agriculture Movements (IFOAM), the Rainforest Alliance (RA) and Utz Certified (OXFAM 2009) – Appendix 6 describes the main features of sustainable coffee certifications and verifications. As well as other small initiatives called Bird Friendly Certification which was created by the Smithsonian Migratory Bird Centre (SMBC). In

order to gain independence, objectivity, transparency and impartiality, these organisations created their own standards, certifications' systems and labelling programmes and rely on external verifiers or third party guarantees that are independent from the certification process (Hatanaka, Bain et al. 2005). Each one of these standards' systems has its label and claims, and all these programmes include, to some degree, aspects of economic development for farmers, environmental conservation, social improvements and quality requirements (OXFAM 2009).

Some analysts have argued that the fast-growing demand in volume of certified coffee backed by TPC bodies is explained by the interest and strong involvement of large-scale companies to source their mainstream products lines from producers linked to the market of certified sustainable coffee (Giovannucci, Liu et al. 2008a, OXFAM 2009, Potts, Van der Meer et al. 2010, Pierrot, Giovannucci et al. 2011). As noted earlier, one of the three ways lead firms can be involved in the speciality coffee sector and the sustainable coffee agenda have implied the adoption of NGO-certified environmental and socio-economic standards in their quality management strategies (Neilson 2008). During the last half-decade, as the certifications' systems have gained wider credibility and acceptability, larger commercial actors in the mainstream market have established strategic alliances with the most important sustainability initiatives as part of their corporate strategies (Ponte and Gibbon 2005, Potts, Van der Meer et al. 2010, Panhuysen and VanReenen 2012).

The main objective is to "seek to both differentiate their offerings and meet emerging demands while improving their positioning as socially responsible corporations" (Giovannucci, Liu et al. 2008a: 47, ACDI/VOCA 2009a). In such a way, retail food service chains (i.e. Dunkin Donuts, McDonalds or Starbucks), mainstream supermarkets (i.e. Wal-Mart, Ikea, among others) and most of the large roasters and retailers (i.e. Kraft Foods, Tchibo, Nestle, Lavazza, Folgers and Sara Lee, among others) (Giovannucci, Liu et al. 2008a, OXFAM 2009, TransFair USA 2010, Pierrot, Giovannucci et al. 2011) have been selling and marketing one or more kinds of certified or verified sustainable coffee in order to scale-up their business. This situation has implied, for example, that McDonalds now offer Rainforest Alliance, Utz Certified and Fairtrade Certified coffees in its British, European and the North America outlets. Meanwhile Dunkin Donuts now sells Fairtrade coffee in its USA outlets, and IKEA's restaurants are serving Utz Certified coffee. Also, larger roasters such as Kraft Food, Lavazza and Schibo; or retailers such as Wal-Mart have been offering Rainforest Alliance certified coffee (Giovannucci, Liu et al. 2008a).

Although the overall political economy implications of this move are far from being analysed, the truth is that the proliferation of initiatives, acceptability among consumers and scaling of these certification systems have moved these initiatives from a niche market system associated with sophisticated consumers towards the mainstream

market (Ponte and Gibbon 2005, Raynolds, Murray et al. 2007, Potts, Van der Meer et al. 2010). In this regard, while these alliances between roasters, retailer, supermarkets and third party certification organisations have not been welcomed at all in certain sectors (Raynolds 2009, Reed 2009), others have seen this joining as a win-win synergy that can benefit both producers, mainstream corporations and the standard certification organisations itself (Jenkins, Akhalkatsi et al. 2007, FAIRTRADE 2009a).

Regarding the first opinion, numerous researchers have raised their concern about the commoditisation of sustainability (Daviron and Ponte 2005, Giovannucci and Ponte 2005, Humphrey 2008, Raynolds 2009) as the differences between the speciality and mainstream coffee market which are "becoming blurred" (Ponte and Gibbon 2005: 12). Some have also pointed out that these moves have been seen not only as an opportunity to 'greenwash' the corporate image and to dictate production and trade conditions (Ponte and Gibbon 2005, Fulponi 2006, Neilson 2008) but also to restrict access to upscale differentiated markets, and as a way to impose their own traceability initiatives and to implement value chain governance (Raynolds 2009). On the contrary, this trend towards the mainstream markets has also been seen positively as the fast growing consumption of certified sustainable coffee which can represent the best way to scale-up the business, increase demand significantly and hence a way to support marginalised producers and their communities (Jenkins, Akhalkatsi et al. 2007, Giovannucci, Liu et al. 2008, FAIRTRADE 2009a). The main idea behind these partnerships refers to the effect that big corporations' involvement in the sustainable agenda can have an overall demand and market penetration of these initiatives (Potts, Van der Meer et al. 2010).

4.6 Conclusions

This chapter has reviewed the most important structural changes that the coffee market has gone through during the last two decades, both from the supply and the demand side. In particular, it has put emphasis on fast growth and the market success of the differentiated industry, which is composed of the specialty coffee sector, and within this, the increasing recognition and growing market value for the sustainable industry. As such, millions of coffee producers have viewed product differentiation and added value to their products and processes as the potential tool for supporting rural development. Estimates for 2015 forecast that nearly one fifth of the global exports of coffee will meet claims of quality, environmental impact, origin and community development among others.

Oversupply and the proliferation of initiatives has implied that producers could not sell their entire production as certified and, as such, the contribution of sustainable standards and certifications to improve the welfare and livelihoods of coffee producers could be limited. This situation has raised concerns about how this has affected the

upgrading opportunities of agricultural producers. There is concern about its effects for the value chain organisation. Not only with regard to its implications of access to agri-food value chains and its effect on rural development but also particularly about the returns and redistributive outcomes that producers obtain from participating in these chains. Therefore, there is agreement with the fact that there is an increasing demand for effective impact evaluation, outcomes and possibilities for these initiatives.

In this sense, although many studies have examine the outcomes and impacts of coffee certifications over the socioeconomic and environmental characteristics of farm households, most of available information is conceptual and/or theoretical, the quantitative evidence available for coffee is case specific as deals almost exclusively on Fairtrade and such impede generalizations over other initiatives (Blackman and Rivera 2010, Alvarez and Von Hagen 2011). However, most the available knowledge today lack of a convincing methodology and research designs that makes difficult to attribute outcomes directly to the adoption of the competitive requirements of standards and certifications systems (Giovannucci and Potts 2008, Alvarez and Von Hagen 2011, Von Hagen and Alvarez 2011, Giovannucci, Scherr et al. 2012). The main methodological conclusion is that only few of the available comparisons have taken the care needed to construct a credible and robust counterfactual, and have addressed and corrected for all the potential selection bias that account for differences between treated and non-treated producers (i.e. certified producers could have larger assets, higher education, larger farms, better access to services than non-certified producers).

Therefore, more studies are needed to address the effects of different value-added strategies in the coffee sector. Up to now, there has been little agreement on the question of how the adoption of private food standards and credence claims has affected the upgrading opportunities of agricultural producers.

Therefore will important to contribute to the debate about the impact that the adoption of different voluntary sustainability standards have on the upgrading strategies of coffee growers and the role that institutions can play to help overcome their most important limitations to further upgrading.

Today is not yet clear what the specific impacts of adding value and differentiating through credence claims initiated by different actors in the coffee value chain on the economic viability of small coffee growers are? Even much less clear, which are the direct effects of some value added initiatives on the welfare of communities and rural workers? And to which extend standards and certifications can be used as a tool for sustainable development?

CHAPTER FIVE
Colombia coffee sector

5.1 Introduction

Coffee and development are synonymous in Colombia (ICO 1997) as the coffee industry has been the principal motor of Colombia´s economic and social development for the past 100 years (Bates 1997, Reina, Silva et al. 2007). For four decades, beginning in the 1960s, the Colombian coffee industry invested heavily in promoting the brand image of "Colombian Coffee" (Kaplinsky and Fitter 2004, WIPO 2007), this meant that not only were many brands all over the world being labelled as 100% Colombian (ITC 2002), but also gained a premium compared to other Mild Arabicas (Reina, Silva et al. 2007).

However, this strategy was only effective while the ICA economic provisions were in effect, since export quantities were regulated and higher revenues for coffee producers could only be obtained through higher green coffee prices. As a result, based on the recognition and acceptance of the character of Juan Valdez® and the triangular logo of Café de Colombia, coffee institutions undertook a new market-oriented strategy after 2002 aimed at improving Colombia's competitiveness as a coffee producer and to restructure its domestic industry in order to capture more value-added along all links in the production chain.

This chapter presents the most important changes of the Colombian coffee industry divided into eight sections. After this introduction, the second part deals with the local context and the macro trends of the coffee industry in Colombia. The third and fourth sections discuss the institutions and its regulatory framework, and the structure and trends in domestic and external marketing. The fifth section describe the upgrading strategies within the Colombia coffee value chain. The sixth section describes and analyses the main features, impacts and challenges of Colombia's new value added strategy. The seventh mentioned the strategies to support coffee growers in Colombia. Finally, the main conclusions are stated.

5.2 Local context and macro trends

Commercial coffee growing began in the 1870s, and coffee was soon exported. It was responsible for generating and expanding an internal market (by developing national industry and other urban activities) and providing the foreign currency needed for growth of other productive sectors. Coffee is grown in mountainous regions at altitudes ranging from 1,000 to 2,000 metres, where the average temperature is between 18 and 22 degrees Celsius and rainfall is frequent. There are 18 coffee growing states (Departamentos) with over 560 coffee growing municipalities (half of country's total).

Over 2,000,000 people's livelihoods depend on coffee activity. Coffee has also been a major influence in regional development. It has assisted in the creation of an economic and social infrastructure within its area of influence.

Topography is one of the most important aspects to be taken into consideration when examining the case of Colombian coffee (Lozano, Samper et al. 2011). Coffee plantations are cultivated in an area of about 900,000 hectares and the coffee growing zone is spread over 3,600,000 hectares across Colombia from the far north in the Sierra Nevada de Santa Marta to the southeast in the Nariño Mountains – a region more than 1,000 km long. Around 88% of the coffee area is planted with improved varieties resistant to coffee leaf rust, cultivated using technically advanced production systems, and 12% with unimproved varieties cultivated using traditional practices.

Linked to the tropical mountain climate and Colombia's location under the inter-tropical convergent zone, Colombia does not have a specific coffee harvesting period, as is the case in many other coffee-producing countries. Depending on the region, coffee is harvested throughout the year, with a principal crop between October and December, and a secondary crop between April and May. There are, however, some regions in which the principal crop is harvested between April and May, and the secondary crop between October and December, thus allowing a more even flow of fresh coffee. Furthermore, irregular flowering cycles give rise to different ripening cycles for the fruits, meaning that it is common for the same branch of a coffee bush to bear flowers and fruits which are going through different ripening cycles (FNC 2006, Lozano, Samper et al. 2011). For that reason, trees cannot be plucked by machinery – added to the fact that coffee is grown on the slopes of the Andes and the Sierra Nevada de Santa Marta mountain range, instead the berries must be picked by hand as the berries do not ripen at the same time (ICO 1997, Giovannucci, Leibovich et al. 2002, Reina, Silva et al. 2007) and contributes not only to the creation of differentiated quality, but also increases the time and effort required during the harvesting stage, as well as the cost in terms of manual labour (Lozano, Samper et al. 2011). After harvesting, the coffee is prepared by the wet processing method. The coffee undergoes a preparation process which transforms the ripe cherries into parchment coffee ready for marketing and industrial preparation.[29]

[29] After picking the coffee-cherry, on the same day it goes to the de-pulping machine which removes the pulp or fruit cover from the seeds that are in the centre of each cherry. Then, the coffee beans, still encased in their tough parchment husk, are placed in fermentation tanks where they are allowed to soak in water for between 12 and 24 hours – this operation may also be carried out using special equipment. This process removes the mucilaginous pulp covering the bean which is of vital importance for the aroma of the coffee. When the washing is over and the fermented mucilage is removed, the beans must be dried in the sun.

There are around 513,000 coffee growers and there are currently some 480,000 families who are directly dependent on coffee production. During the last four decades the coffee production area has declined 17%, or about 178,000 hectares. Additionally, since 1970, there has been an increase in the number of coffee farms from 296,830 to 512,938, and a reduction in the coffee-growing areas from 1.05 million hectares to 873,659 hectares in 2012. This indicates a reduction in the average size of farms from 14.8 hectares to 6 hectares, and in the average size of the actual coffee plot, from 3.5 hectares to 1.7 hectares.

As a result, smallholdings predominate in Colombia (García and Ramírez 2002, García 2003). Nowadays, 73% of the coffee growers are micro and small-scale producers concentrated in farms with less than five hectares and coffee plots even smaller (on average, farms form 1.6 hectares and coffee plots from 0.9 hectares) where the family is the primary source of labour, see Table 5.1. These households have a clear dependence on coffee as around 70% of their income comes from the commercialisation of coffee beans (García and Ramírez 2002) in addition to other agricultural activities or labour wages at the biggest farms.

Table 5.1 Typology of coffee producers in Colombia 2007

Farm size (ha)	No. Of farms	Total area (ha)	Area used for coffee production (ha)	Farms size (ha)	Coffee plot size (ha)	% of land used for coffee	Share of total farms (%)	Share of total area (%)	Share of area used for coffee production (%)
< 0.50	77,226	20,458	18,818	0.3	0.2	92	15.1	0.7	2.2
0.51 a 0.9	75,898	51,326	40,265	0.7	0.5	78	14.8	1.7	4.6
1.0 a 3.0	155,616	270,390	157,422	1.7	1.0	58	30.3	8.9	18.0
3.1 a 5.0	68,947	258,653	117,929	3.8	1.7	46	13.4	8.5	13.5
5.1 a 10.0	67,104	461,559	168,889	6.9	2.5	37	13.1	15.1	19.3
10.1 a 15.0	25,349	303,907	87,332	12.0	3.4	29	4.9	10.0	10.0
15.1 a 20.0	12,710	217,698	52,402	17.1	4.1	24	2.5	7.1	6.0
20.1 a 30.0	12,573	303,918	64,582	24.2	5.1	21	2.5	10.0	7.4
30.1 a 50.0	9,745	368,023	62,962	37.8	6.5	17	1.9	12.1	7.2
50.1 a 100.0	5,677	383,789	56,077	67.6	9.9	15	1.1	12.6	6.4
>=100.0	2,093	410,421	46,981	196.1	22.4	11	0.4	13.5	5.4
Total	512,938	3,050,141	873,659						
Average				5.9	1.7	58.7			

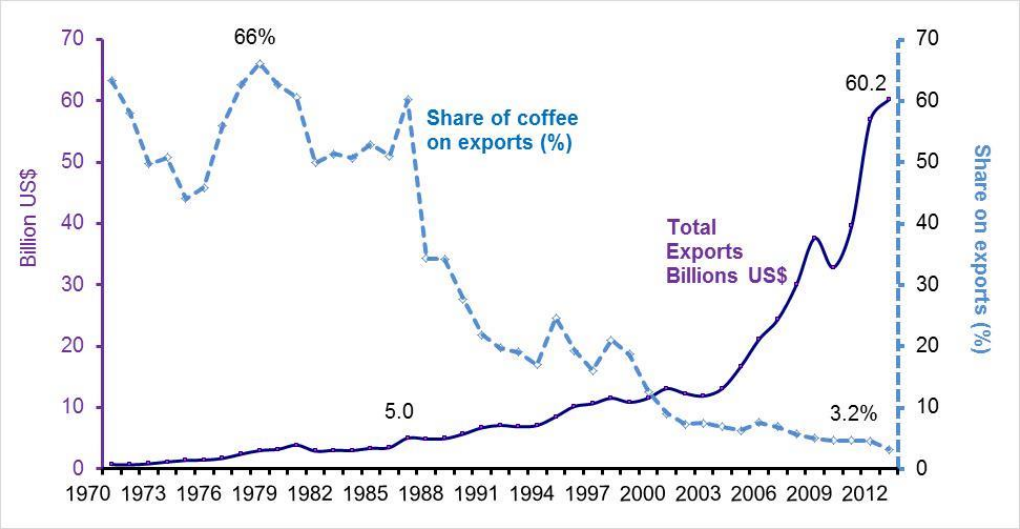
Source: Author's own calculations based on FNC databases

Although the smaller farms are more likely to specialise in coffee production, the consequence of the reduced size of their farms, is that around one third of the coffee producers cannot generate sufficient income to live out of poverty (García and Ramírez 2002). They face high levels of vulnerability unless they have other sources of additional earnings (Forero 2010). In this respect, evidence has shown that in the countryside, there are reduced employment opportunities as well as rural diversification options (Giovannucci, Leibovich et al. 2002). As a consequence, levels of poverty are above 50% in the coffee zone of Colombia, adding to high levels of the land´s concentration

according to the Gini coefficient of the farms which was around 0.74 in 1997 (García 2003).

For many years, coffee was the principal contributor to export earnings as its value at one point reached 80% of total export earnings in the 1950s and levels of around 60% in the 1970s (Giovannucci, Leibovich et al. 2002). Although its share in total exports revenue has declined to about 5% of export income today, there has been an increase in exports of other sectors such as oil, coal or non-traditional exports; Colombia´s exports of 7.8 million bags in 2010 contributed to almost USD 2.21 billion (FNC 2011a), Figure 5.1. Notwithstanding this trend as a result of the diversifications in exports over the last 40 years, still nearly 500,000 families depend on coffee for their livelihoods.

Figure 5.1 Coffee in Colombia´s global exports by value and share 1970 - 2010

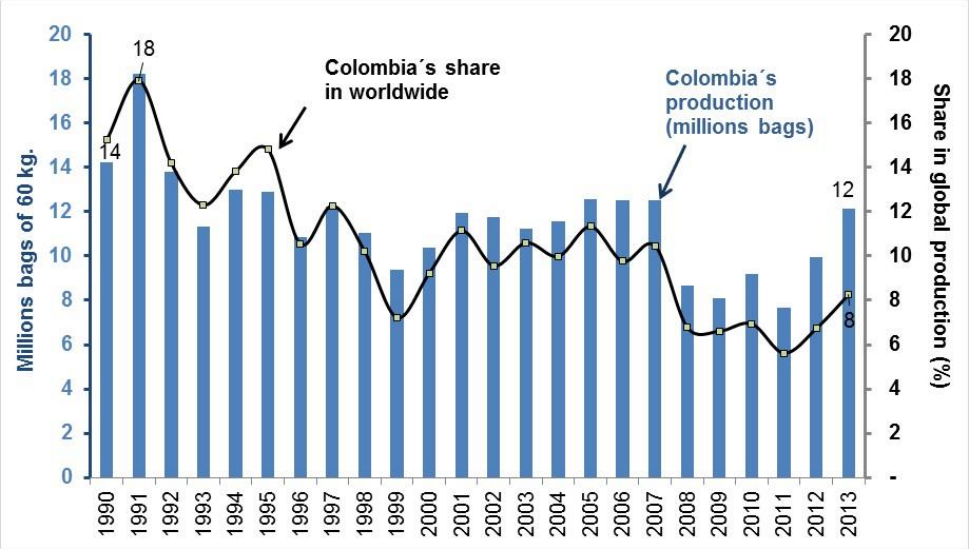


Source: Author's own calculations based on the Central Bank's statistics

Currently, Colombia is the world´s third largest coffee exporting country and the biggest producer and exporter of Mild washed Arabicas. Its average coffee production during the last ten years was around 11 million bags of 60 kg which represents around 7% of the worldwide harvest and around 80% of the Mild Arabicas supply, Figure 5.2. Between 2008 and 2012 in Colombia, a number of factors severely affected Colombia's harvest which implies. These included severe climate conditions because of the El Niño and La Niña weather phenomena with a long and strong rainfall period that affected coffee flowering and coffee formation, extreme high fertiliser prices in 2007 and 2008 that discouraged growers from applying fertilisers to their trees, added to the recurrence of the coffee berry borer (CBB) infestation, a severe outbreak of coffee rust and the continuation of the coffee tree rejuvenation programme (USDA 2010, FNC 2010a, FNC 2011a).

As a consequence, Colombian coffee production during the 2009, 2010, 2011 and 2012 seasons reached the lowest levels since the 1970s. Despite the FNC´s active coffee production policy being implemented in Colombia since 1970 in order to increase physical productivity in coffee plantations (Giovannucci, Leibovich et al. 2002), it is known that Colombia likes behind competitor countries such as Costa Rica, Brazil and Vietnam in terms of productivity per hectare (Avellaneda and Ramírez 1995, Reina, Silva et al. 2007, Word Bank Group 2015), and the weather conditions worsened this situation. Between 2008 and 2012, there was a decline of 26% compared with the average of the previous eight years (from 2000 to 2007), from around 11.8 million bags to around 8.7 million bags (FNC 2010a, FNC 2011a, FNC 2011c, FNC 2013a, FNC 2013b). This situation added to the increase in production from Brazil and Vietnam which relegated Colombia in terms of global supply from 13% in the 1990s to around 7% in the 2000s.

Figure 5.2 Colombia´s harvest (million bags of 60 kg) vs. share in worldwide harvest 1990 - 2013



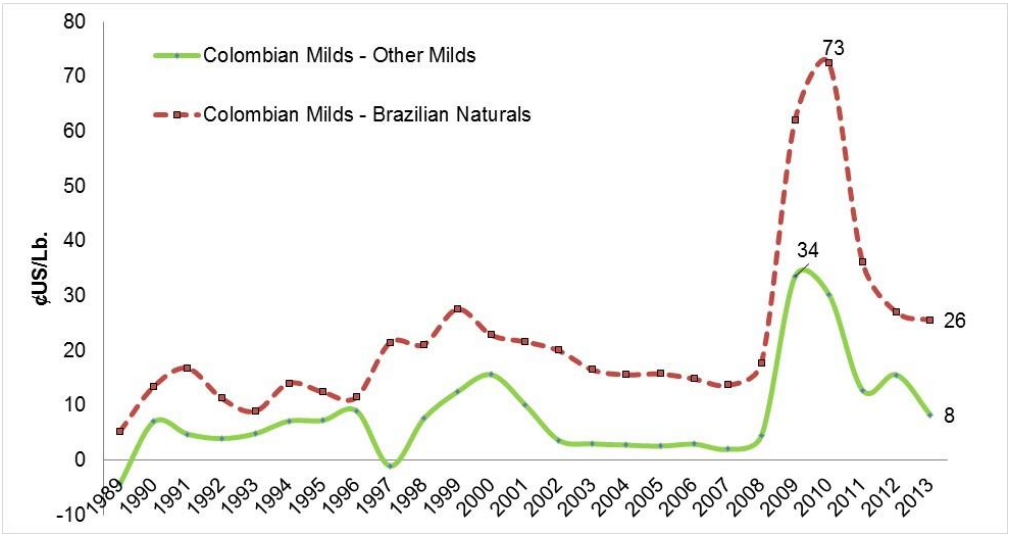
Source: Author's own calculations based on FNC databases

In order to increase the declining productivity per hectare to the levels seen in recent years, improve the competitiveness of the Colombian´s coffee sector, and recoup its position as the second largest producing country to supply coffee both mainstream and the specialty market, coffee authorities with the support of the national government took policy actions in 2008 and 2009 through different activities (FNC 2010a, FNC 2011a, FNC 2011c). These comprise helping producers: (a) rejuvenate aging coffee plantations by providing seeds from resistant varieties, bags and seedlings; (b) reduce production costs, by providing free supplies such as chemical fertilisers and fungicides; (c) extending access to credit lines to small farmers that enable them to buy inputs during difficult weather periods, and offering opportunities for refinancing previous debts; (d) a price subsidy programme that guarantees price support for coffee production if the internal

price is under COP 5,200 per kg. (1 US dollar = 2,000 COP). This programme allows producers to register a portion of their expected coffee production, protecting them at harvest time against a fall in coffee prices below COP 5,200 per kg.; (d) quality standard penalties were relaxed if coffee grains were infested with levels of coffee berry borer of over 5% for the standard and 3% for speciality coffees coffee; (e) hedging against falling coffee prices using coffee futures.

The two main collateral effects from the sharp reduction in the Colombian crop were the historical high coffee prices witnessed during 2010 and 2011, not seen since 1997, see Figure 4.1 in the previous chapter, and the widening of the differences between the indicator prices of the Colombian Milds and its main substitutes in the coffee market. As the possibility of substitution by other origins at that time were limited (FAIRTRADE 2010c) due to shortages in output across Central America, Mexico and Peru (TransFair USA 2010), the difference between the indicator price of the Colombian Milds and Other Milds and Brazilian Naturals reached all-time highs during 2009 and 2010. Since then, the industry has made efforts to substitute the most expensive origins and counteract them in the upward pressures on market prices (as discussed in chapter 4) so that the differentials between prices of Colombian Milds and the other groups of coffee were down (ICO 2010a, ICO 2010b), see Figure 5.3.

Figure 5.3 Differences between indicator prices of Colombian Milds and Other Milds and Brazilian Naturals 1989 - 2013



Source: Author's own calculations based on ICO databases

As was mentioned in the previous chapter, the differential against the Other Milds has decreased significantly since 2011 due to a sharper increases in the price of the Other Milds. Due not only to the continued increase in demand to offset the reduced supplies of Colombian Milds (ICO 2010b), but also the supply from Colombia has increased while the availability from Central America has been reduced (ICO 2011f). As such, the

differential between Colombian Milds and Other Milds narrowed down in 2011 to 12 US cents, 15 US cents during 2012 and 8 US cents in 2013, as shown in Figure 5.3 (ICO 2011d, ICO 2012a, ICO 2012b, ICO 2013).

As many analysts have observed, price premiums for Colombia´s Milds rose to almost $1 per lb. above the futures prices in New York (FNCa 2010, USDA 2010, FNC 2011a). Similarly, ICO prices for Robustas, Brazilian Naturals, Other Milds and the indicator ICO Composite price jumped after 2008. All this affected the local commercialisation chain, but particularly the trade of speciality and sustainable coffee as many buyers were unwilling to pay both the premium of certification as well as the high scarcity premium associated with the quality premium. This meant that quality premiums tended to diminish as overall coffee prices peaked, and the farmers lose their incentives to produce specialty coffees.

Additionally, the widening of these differences between origins caused logistical and important financial problems due to side-selling. As current coffee prices in 2009 and part of 2010 were higher than that of the hedging price, the coffee growers decided to sell their coffee to other agents who offered better prices and increased their profits. This situation added to the drop in Colombia's harvest, and also implied that many companies did not fulfil their commitments abroad which put Colombia under threat due the fact that there was not enough coffee to supply all their customers.

5.3 Institutions and Regulatory framework

Colombia still has regulation and marketing regimes after the breakup of the economic clauses of the ICA in 1989 (Baffes, Lewin et al. 2005), and coffee is one of the most regulated agricultural sectors within the country (Giovannucci, Leibovich et al. 2002). Coffee management has been undertaken by the National Coffee Growers Federation of Colombia (FNC), a private non-profit organisation established by coffee growers since 1927 (Bates 1997, Reina, Silva et al. 2007). It executes a wide range of activities and programmes which are determined by the National Coffee Committee which is the public-private body that acts as the managing board for the National Coffee Fund (FoNC, by its acronym in English) established in 1940 (ICO 1997). To accomplish its duties of provision of both essential public goods and its role as a buyer as a last resort, FNC employs the resources of the coffee "contribution". This is a tax collected from the coffee exporters and indirectly paid by the coffee growers[30] of around 4% and 6% for each pound exported, which varies according to the level of the Colombian FOB sale

[30] The income of the tax is deposited in the National Coffee Fund, which is managed by the Federation.

price.[31] As a result, all coffee growers end contributing to the Federation in correspondence with their amount of production.

With these resources, the FNC has founded a coffee policy whose main functions can be resumed in four basic fields: (a) price setting; (b) the transference of a fair market price to coffee growers and guaranteeing the purchase of all coffee offered so long as they comply with the pre-determined quality standards; (c) the provision of critical services such as research, extension, storage facilities and infrastructure; (c) quality control for all the coffee exported and (d) sales and marketing overseas for *Café de Colombia*. As a result, FNC´s areas of action includes activities and programmes in a wide range of areas: economic, social, scientific, technological, industrial and commercial, all of them oriented to maintain the strategic share of the coffee sector of Colombia in the economy (Bates 1997, ICO 1997, Giovannucci, Leibovich et al. 2002, Reina, Silva et al. 2007).

One of the world´s best known jobs from FNC undoubtedly is it publicity campaign, Figure 5.4. Since 1960, FNC´s unified marketing campaign and brand development of coffee was conducted through which Reina et al. (2007) have called a *differentiation strategy*, from which the "100 % Colombian coffee" programme was the basic strategy and the Juan Valdez® character was the image to promote Colombian coffee as the best in the world.

Figure 5.4 Juan Valdez Trademark

Source: Reina et al. (2007)

Colombia became the first coffee producing country to embark on an active strategy of differentiation and marketing its product in the coffee world (Giovannucci, Leibovich et al. 2002, Reina, Silva et al. 2007, WIPO 2007, Hughes 2009, Juglar 2009, The Economist 2010). The triangular symbol of "Cafe de Colombia" represents the archetypal Colombian coffee grower. Juan Valdez and his faithful mule represent the characteristics of the humble farmer in the Andes mountains where Colombian coffee is grown. The main result of this strategy had been favourable growth in the recognition of Colombian coffee as a high quality origin, making it the leader of the mainstream segment (Reina, Silva et al. 2007).

[31] According to the Law 1151 of 2007 a tax of US¢ 6 applies for each pound of green coffee exported unless the price falls below US¢ 0.60 per pound of coffee. It is supposed that by means of the market this tax is translated to coffee growers.

Thanks to the increasing recognition of the quality of the coffee coming from Colombia and the increased demand for the product by consumers and roasters, FNC´s brand development and unified marketing strategies have ensured that the market is constantly paid a premium for the quality and consistency of Colombian coffee (Bates 1997, Thorp 2000, Deshpande 2001, Giovannucci, Leibovich et al. 2002, Hughes 2009). This marketing approach that has been unparalleled in the coffee world created opportunities to capture more value in downstream activities (Giovannucci, Leibovich et al. 2002). However, this strategy, perhaps the most successful campaign for a product from a developing country (Deshpande 2001) was effective while the International Coffee Agreement ICA economic provisions were in effect until 1989, since export quantities were regulated and higher revenues for coffee producers could only be obtained through higher green coffee prices premiums.

Once the last ICO agreement ended, Colombian coffee begin to lost its dominance within the quality coffee segment and there was a massification of the Colombian brands at the segment of mid-level prices (Reina, Silva et al. 2007). As a result, the premium that the market was willing to pay on 100% Colombian coffee compared with other Mild Arabicas declined steadily as well as the position of Colombian coffee in the mass market segment. Although the market had constantly paid a significant premium for the quality and consistency of Colombian coffee it decreased from 28 cents per pound in the period of 1960 to 1990, to only 7.9 cents per pound between 1991 and 2006 - in 2006 constant US dollars (Reina et al. 2007, p. 213-14). In this sense, there is consensus relating these changes to the expansion of the specialty coffee segment, propelled in part by the emergence of new consumption patterns. Quality criterions and quality awareness now tend to concern more the product's taste and/or physical attributes, also the growing importance of conscious consumption (socioeconomic effects, environmental and biodiversity loss), single origin coffees, added to the out home consumption in coffee chains and speciality shops (Ponte 2002, Daviron and Ponte 2005, Muradian and Pelupessy 2005). This implies that national branding strategies will become less effective, while strategies based on quality, and certification of non-intrinsic characteristics of particular coffees will become more important.

The answer to this situation, based on the recognition and acceptance of the character of Juan Valdez and the triangular logo of Café de Colombia, was the development and implementation of a *value added strategy*. Its goals were to consolidate the position of Colombian coffee in the mainstream market as well as to guarantee its presence in the new niches markets and high value segments that have been emerging in the last two decades. Colombian coffee authorities reframed its differentiation branding strategy to expand the sphere of its commercial activities. Through a new value added strategy (see section 5.5), which includes market differentiation beyond quality, brands for new

products and segments, managing marketing alliances, and selling of coffee directly to consumers, the underlying objective of its value added strategy is to offer consistently a "relevant 100% Colombian product for each occasion at a consistent price" (Reina, Silva et al. 2007: 180).

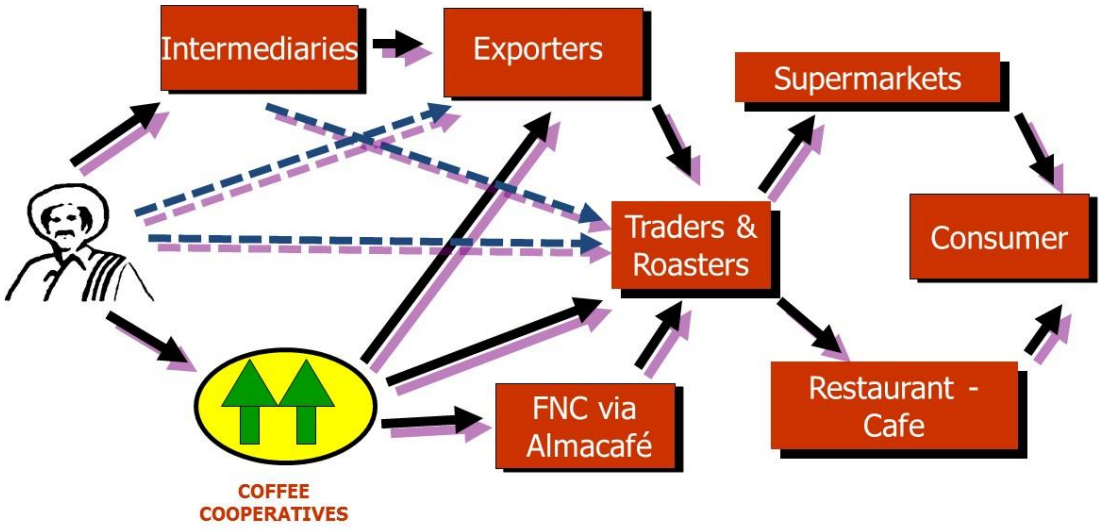
5.4 Structure and trends in domestic and external marketing

During the last 20 years the private sector, led by intermediaries, backed both by local and international traders have been gaining the lion's share of the local and international market against the share of the cooperatives and the FNC. This section describes these changes and how the marketing chain operates.

The coffee marketing chain for Colombia is described below in Figure 5.5. Dotted lines represent the new market relationships established between producers of differentiated coffees and other stakeholders. Traditionally coffee growers have two options for selling their parchment or wet coffee (once the process of de-pulping or wet milling has been carried out) in the internal market: intermediaries and cooperatives. Cooperatives were created in the 1960s, in part, as the purchasing arm or buying agent of the FNC but principally to fulfil the basic goal of Colombian coffee policy, which is to guarantee the purchase of the whole harvest at a minimum sustenance price (Ramírez, Silva et al. 2002). Additionally, the FNC created Almacafé that forms part of the logistical chain and plays a key role in the post-harvest commercialization process both domestically and externally. It manages a national network of warehouses that collect, store, process, inspect, and ship 30%-35% of Colombia's coffee. It is from these warehouses that samples are sent and approvals received from overseas buyers. Almacafé also manages the collection of the export tax or "contribución".

Regarding the intermediaries, there are those who purchase coffee at their own risk, investing their own financial resources, and those who buy coffee on behalf of exporters (financed by local capitals and backed by MNCs), who provide them with funds. Those who procure coffee at their own risk sell to anyone who gives them the best price, usually exporters or millers who transform the parchment coffee into green coffee and, in turn, sell it to traders or roasters. Today, many exporters and cooperatives are also vertically integrated with the mills, who expect to make profits off the coffee sub-products that result from milled parchment coffee as these are sold to the national industry as processed coffee. Those exporters without these facilities must buy from millers.

Figure 5.5 Colombia's coffee marketing chain



Source: Author's adaptation from (ICO 1997).

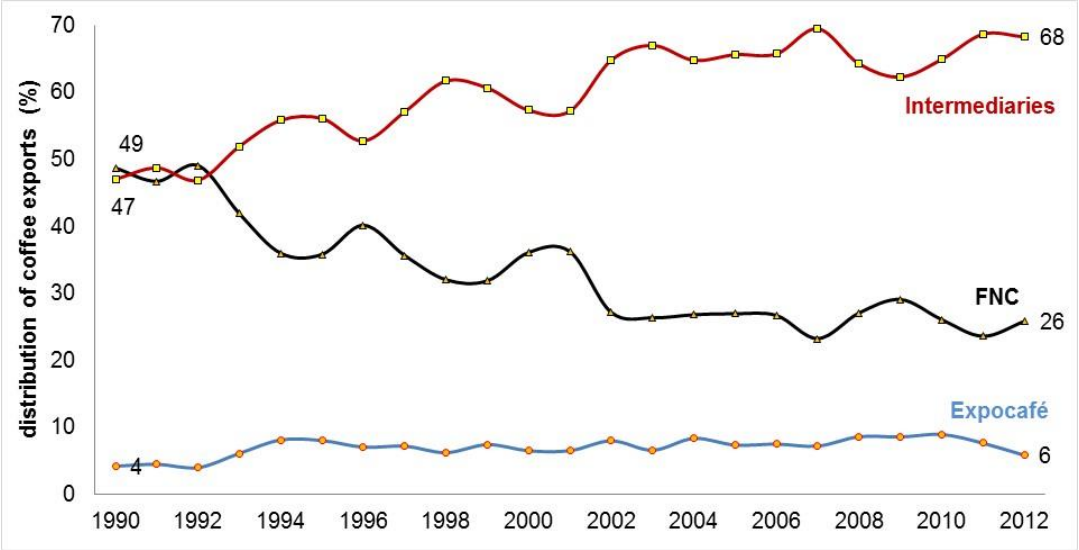
During the last 20 years, as in other producing countries, there has been an increase in involvement or international traders at the local markets in developing countries (Neilson 2008). Therefore, national intermediaries and local exporters have seen how downstream traders have concentrated their participation both in the local markets against cooperatives and the export market against the FNC who have been reducing their participation in the local and external markets. The trends in exports shows that in 2012, the FNC exported 26% of the total exports of Colombia – 2 million bags of around 7.8 million bags of 60 kg, Expocafé, the cooperatives' own exporting company, 6%, and the private sector the remaining 68%. Meanwhile, two decades ago these numbers were 49%, 4% and 47% respectively (Figure 5.6). This means that the FNC have lost nearly one fourth of the market against exporters in two decades.[32]

In this sense, although there are nearly 60 exporting companies in the market, trade of green coffee is concentrated on six companies accounting to nearly 50% of the export market. For example, local exporters as Racafé, Espinosa Hermanos, and Expocafé (the cooperatives' own exporting company) have given space to companies as S.K.N. Caribecafé, Carcafe, and the Compañía Colombiana Agroindustrial which represents the interest of the NeumanKaffee; ED&F Man coffee division; and the ECOM Coffee group respectively. Other channels have connected producer directly with roasters and international traders, for example through the international cupping named the Cup of Excelence (www.cupofexcelence.com) or smalls rosters from EU of UE that buy coffee directly from certain producers in certain particular areas of Colombia. Additionally,

[32] During the last few years, doubts and questions have arisen about the efficiency of Colombia's highly regulated coffee marketing scheme and its potential to distort the market (Clavijo, Jaramillo et al. 1994). In particular, private exporters, as well as the central government have emphasised the dual role of the institution as the FNC which at the same time served as a regulatory agency and as a market participant purchasing nearly 30% of exports.

groups of producers (from Fairtrade in particular) have been selling directly to roasters and traders in order to raise their margins. Field interviews revealed that producers can substantially raise their margins (but also their risk[33]) as normally from the purchasing price announces daily discount their own margins as well as transportation costs from each of their purchasing points.

Figure 5.6 Trends in Colombian exports 1990-2013

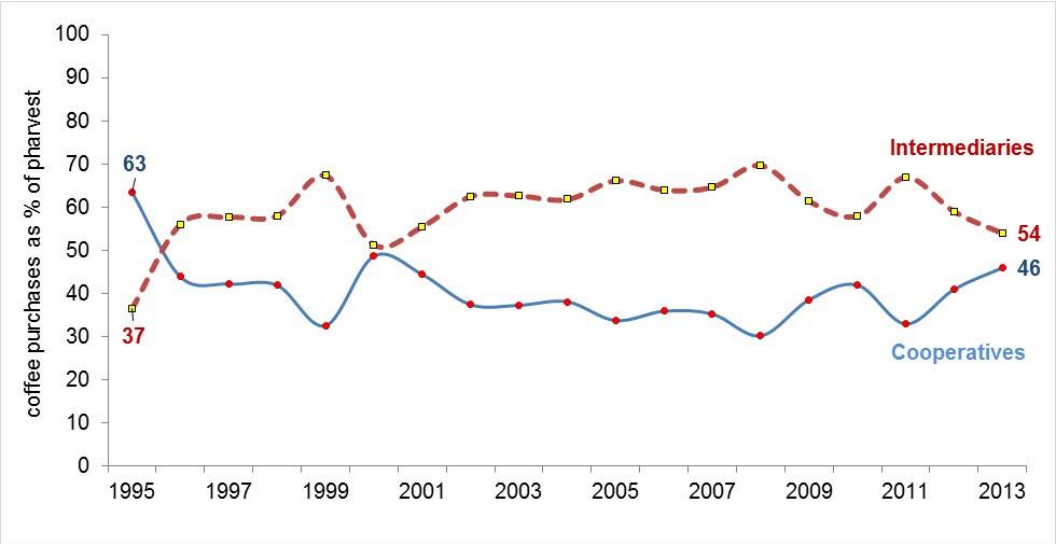


Source: Author's own calculations based on FNC databases

Meanwhile, at domestic level, historically coffee growers' cooperatives have bought more than 50% of the crop – increasing their share when international prices are falling and decreasing it when the price trend is moving upwards. During the last 10 years, cooperatives have reduced their participation against intermediaries who are gaining this space, Figure 5.7. During the last two decades, the Colombian coffee sector has seen how the intermediaries have become the largest market force beyond the FNC and Cooperatives. According to several stakeholders interviewed during field work, international traders have backed local buyers in order to satisfy the growing demand from speciality coffee. In the year 1990, intermediaries purchased 49% of the production and the cooperatives purchased the remaining 51% of the total harvest. In 2013, 35 cooperatives of coffee growers who distributed nationwide with more than 500 purchasing points, purchased 33% of the production while the intermediaries purchased the remaining 67% of the coffee production (FNC 2010b, FNC 2011a).

[33] Field interviews with several representatives of two associations coffee producers of Fairtrade revealed that margin could be substantial. However, if the quality of the coffee is below the standards of the buyer, then the coffee could be rejected. This situation have implied even the bankruptcy from some associations.

Figure 5.7 Cooperatives and Intermediary purchases (as a % of total harvest)



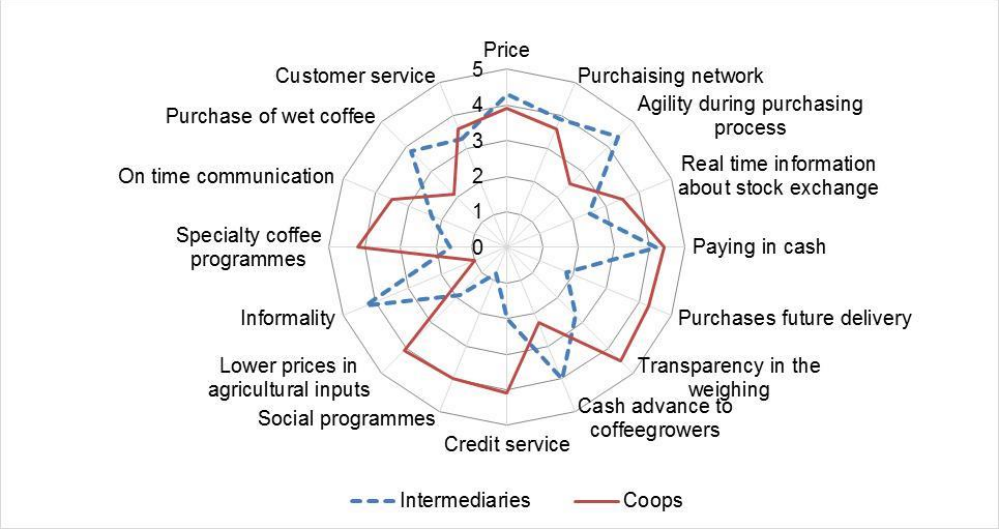
Source: Author's own calculations based on FNC databases

A study carried out by the cooperatives in Colombia (FNC 2010b) in order to know the main weaknesses and strengths, as well as explaining why the intermediaries had been gaining space in the local markets, found at least four reasons. According to Figure 5.8, the intermediaries not only offered higher farm gate prices, but also because they could offer cash in advance, their buying process were more agile and informal, and most importantly, they bought coffee in its wet state. This last issue is very important as this practice of buying wet coffee has been implemented mainly due to the lack of milling infrastructure at the farm level for processing coffee cherries. As such, while intermediaries have been offering this facility for a long time, the cooperatives have reacted slowly to this problem and just recently have started to supply this service to the coffee growers.

The economic impact of selling wet coffee has not been documented so far. However, according to the interviews carried out during field work, including private local buyers of wet coffee, as well as producers and some members of the extension service, producers sell their coffee below 10% and 15% of the market price plus the premium for good quality beans. Although this situation will be commented on in Chapter 6, one study in 2002 reported that about 60% of coffee growers did not have ready access to proper post-harvest processing facilities which implied that they sold their coffee in a wet state (Giovannucci, Leibovich et al. 2002) with important effects in their gross margins. Another study, financed by USAID in order to promote the production of speciality coffee in Colombia, pointed to the lack of infrastructure of processing the coffee cherries as a bottleneck for coffee growers to connect to high value markets (Castro, Ochoa et al. 2009).

The study also revealed that the cooperatives´ strengths are their programmes of social service, as well as their programmes of credit and agricultural inputs supply, added to their activities of promotion of speciality coffees and the hedging of future delivery purchases (FNC 2010b). Regarding this issue, interviews carried out during field work also highlight the higher transaction and fixed costs that cooperatives must face compared to intermediaries – on some occasions propelled by inefficiencies and bureaucracy. As such, intermediaries are in a position to offer better prices added to the fact that quality requirements at the cooperative level are very high compared to intermediaries agents.

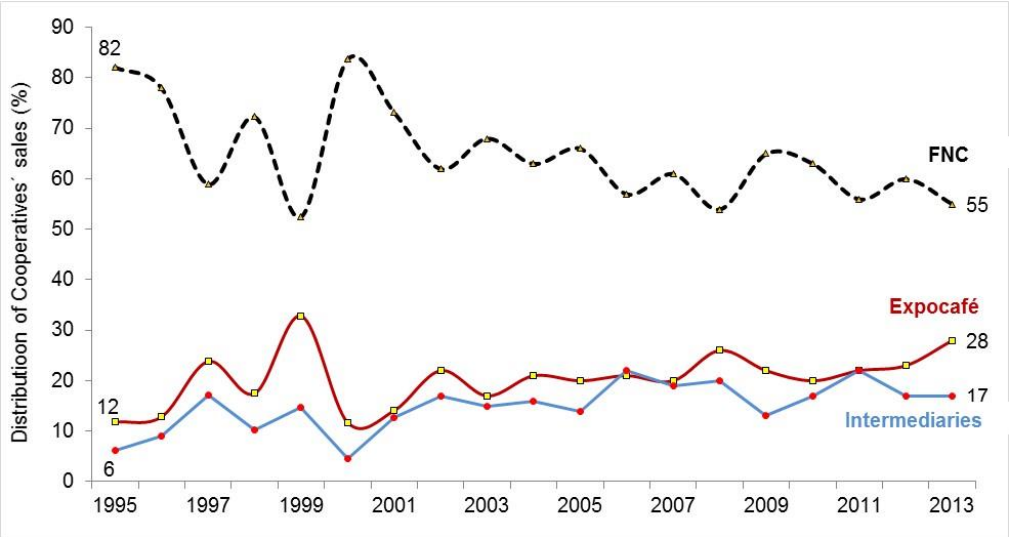
Figure 5.8 Stakeholder´s assessments of the performance of cooperatives and intermediaries



Source: Author's own calculations based on (FNC 2010b)

Regarding the trends in Cooperatives´ sales, - 46% of the total harvest in 2013 as depicted in Figure 5.7, data revealed how the cooperatives´ coffee total sales to the FNC have been decreasing while being augmented to Expocafé, and intermediaries. During 2013, 55% of cooperatives´ coffee was sold to the FNC, 28% was sold directly to Expocafé, while the remaining 17% was sold to intermediaries to be exported or destined to the local market, Figure 5.9. Traditionally the FNC have supplied the cooperatives with the financial resources in order to give them the liquidity needed to purchase coffee in some of the more remote rural areas and thus guaranteeing crop purchase. This cash advance, routed through Almacafe is cost free if the coffee is sold to FNC. However, if they sell to Expocafé - their own coffee exporting company founded in 1985, using the funds provided by the FNC, they are charged 15% simple fees on the borrowed funds. They can only sell to intermediaries or private exporters if they use their own financial resources for purchasing the coffee (Giovannucci, Leibovich et al. 2002).

Figure 5.9 Cooperatives´ sales distribution 1990-2013



Source: Author's own calculations based on FNC databases

Interviews during the field work revealed that during the last few years, cooperatives have had to face a highly competitive market, meaning that the biggest cooperatives have preferred to make use of their financial resources in order to reduce its dependency from FNC and its high level of requirements to have access to their economic resources. So, in the context of a highly differentiated market and the lowest crop levels since the 1970s, cooperatives have the chance to sell their coffee to the best bidder. In this way, is possible to explain the increase of intermediaries in the coops´ sales. However, according to some employees of Cooperatives and the FNC interviewed during field work, there are many conflicts in their relationships that have operated in favour of private intermediaries. In particular, this occurs in those cooperatives located in areas of high demand of speciality coffee or with higher operational costs.

5.5 Upgrading within the Colombia´s coffee value chain

Around 2002 the FNC began implementing a new value added strategy to consolidate the position of Colombian coffee in the mainstream market as well as to guarantee its presence in the new market niches that had emerged in the past decade (Reina, Silva et al. 2007). This strategy, includes various types of upgrading result of innovation both in areas of production, processing, marketing and branding of coffee products, as well as through the acquisitions of new task in the value chain. The main motivation is the collective appropriation of the value generated allowing producers to obtain higher rents, reducer risk through higher opportunities for selling coffee and enhance coffee growers' livelihoods (FNC 2007b, FNC 2008).

Chapter 2 mentioned that the literature on value chains analysis refers to four paths of upgrading that developing-country farms and firms within value chains might develop:

(i) *product upgrading*; (ii) *process upgrading*; (iii) *functional upgrading*; and (iv) *Inter-sectoral (or inter-chain) upgrading* (Gereffi, Humphrey et al. 2001, Humphrey and Schmitz 2002a, Humphrey and Schmitz 2002b). The first three of these have been implemented by the coffee industry in Colombia. More recent literature has challenged this classification and has identified two broad categories of upgrading trajectories within agri-food value chains (Ponte and Ewert 2009, Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010, Ponte, Kelling et al. 2014). In what follows, the author use the new two-group of upgrading trajectories: (i) improve product, process, volume and variety of products in the same value chain; and (ii) change and/or add functions (Ponte, Kelling et al. 2014).

In this sense, in the Colombia coffee sector have promoted the upgrading of processes linked to the development of new technologies in areas related to the cultivation of coffee beans and their processing following harvesting. Innovations include, for example, the introduction of good practices in terms of cultivation, harvesting of ripe beans and wet and dry processing. Include also the application of science to introduce new crop varieties resistant to coffee leaf rust that optimize production costs and generate lower unit values through increases in yield productivity and efficiency. Today, as a result of a policy of promotion and subsidies to the producers, 61% if the coffee area in Colombia are cultivated with resistant varieties (FNC 2013b).

Colombia has implemented the Near-Infrared Spectroscopy (NIRs) evaluation at the inspection offices in every seaport for verifying the origin of exported coffee; this tool provides the bean´s spectral print and confirms coffee origin before it is shipped (Berthand, Villareal et al. 2008, Posada, Ferrand et al. 2009, Villareal, Laffargue et al. 2009, Oberthür, Läderach et al. 2011). This tool is also used to demonstrate the differences between regional coffees origins and avoid that growers belonging to non-origin regions try to benefit from the coffee reputation of other regions without contributing to this reputation (i.e. to demonstrate the differences between coffees coming from Nariño and those from other neighbouring coffee regions) (Samper 2012).

Secondly, the upgrading of products, under which the productive activities have been reorganized through a new branding strategy which includes market differentiation throughout the development and promotion of a range of specialized green coffees that includes VSS and specialty coffees. This includes the production of coffees with distinctive quality attributes embedded in specialty coffees, geographical indications, and sustainable labels. In the case of specialty and certified coffee initiatives, its exportations increased from 1.2 million bags in 2002 to 2.6 million bags in 2013 (FNC 2014). Next section will develop more deeply the outcomes of the upgrading of processes in Colombia through voluntary sustainability standards and regional coffees.

Thirdly, there have been also policies for promoting volume upgrading as is know that physical productivity in coffee plantations is behind competitor countries such as Costa Rica, Brazil and Vietnam in terms of productivity per hectare. As was mentioned above, coffee authorities with the support of the national government took policy actions to increase the declining productivity through, inter alia, rejuvenate aging coffee plantations, providing free supplies such as chemical fertilisers and fungicides, extending access to credit lines, and price subsidy programmes. However, improve product, process and volume still face difficult challenges as will be depicted in chapter 6.

Thirdly, there is the functional upgrading or "upgrading within chains", which has enabled coffee institutions to acquire new functions in the chain. This approach has involved not only the incorporation of marketing services in the fields of logistics, storage, traceability, as well as in the processing segment by commercializing free-dried coffee and the segment of roasted coffee covering direct sales of the product in supermarkets and coffee shops. Strategies based on segmentation and differentiation, in which brands and indications of source play a fundamental role. However, functional upgrading at farm level have been mostly discouraged. In this sense, most of the leaders of the produced associations interviewed during field work signalled profound difficulties and obstacles to "walk alone" in this enterprise.

5.6 Colombia´s new value added strategy

One of the most important changes in Colombia´s coffee marketing during the last decade refers to the undertaking, since 2002, of a new market-oriented strategy of value added. The main goal was to reframe the differentiation strategy, in order to optimize production costs, consolidate the position of Colombian coffee in the mainstream market as well as to guarantee its presence in the new market niches that had emerged in the past decade (Reina, Silva et al. 2007).

In this regard, Colombia's differentiation strategy implemented in the 1960s, tied to the programmes of Juan Valdez and "100% Colombian Coffee" which was no longer meeting the new challenges set forth by the market, was not enough to face the new realities of the coffee world and meet the new challenges set forth by the market (Clavijo, Jaramillo et al. 1994, Giovannucci, Leibovich et al. 2002). Based in two complementary set of instruments and products, Colombia's coffee institutions undertook a new market-oriented strategy in order to create new business alternatives to add value to coffee along the coffee value chain (Ramírez, Silva et al. 2002).

First, this policy comprised selling coffee at the Juan Valdez Coffee Shops Chain, participating in the retail channel with Buendía freeze-dried coffee, licensing '100% Colombian Coffee' as an ingredient brand in both mature and emerging markets, the

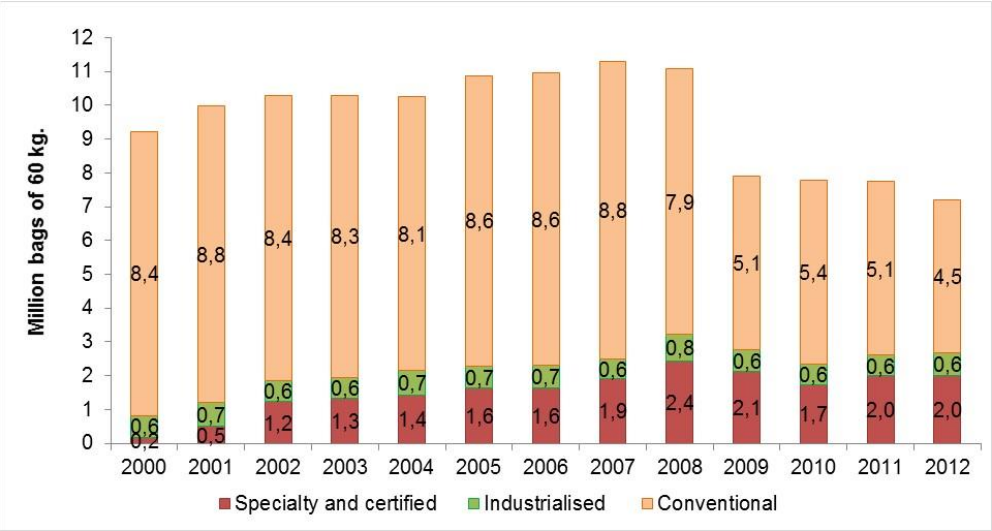
sale of Juan Valdez's brand coffee in supermarkets and the introduction of lesser known products such as the development and commercialization of pods, extracts, ready-to-drink coffees and the soft drinks made from coffee, known as coffee colas (Reina, Silva et al. 2007).

By 2005, there were 21 Juan Valdez coffee shops operating in the main cities of Colombia; by the end of 2013 the number of shops had increased to over 180 in 24 cities. One of the most important aspects of the Juan Valdez shops are the royalties that the use of the brand generates for the FoNC; the accumulated value since the beginning of the project through 2013 is over USD19 million (FNC 2013a) The FNC plant that produces freeze-dried coffee in Colombia, which has operated since 1973, reached sales in 2013 by 8.025 tons and earnings by USD 118 million (compared with 7.118 tons and earnings by USD 67 million in 2005). Meanwhile, the use of Colombian coffee in brands with the logo "Café de Colombia" had increased substantially. By 2008, 674 brands carry the logo "Café de Colombia" as an ingredient brand around the world. By 2013, nearly 680 brands used the logo as an ingredient brand (FNC 2013a, FNC 2013b). In sum, it can be said that the portfolio of projects that employ the Juan Valdez product brand is growing. As was pointed in the previous Chapter, this credence claim attributes could bring economic benefits to those controlling its intellectual property rights (Duguid 2003).

Second, alongside these policies, there was a parallel strategy to invest in the development and promotion of differentiated coffees including the production of coffee with distinctive quality attributes embedded in voluntary sustainable standards and specialty coffees. Colombian exports amounted to 7.2 million 60 kilo bags in 2012, and from this amount, nearly 2.6 million bags received an extra value or 37% or the total exports (FNCa 2010, FNCa 2011, FNC 2011b, FNC 2012). A very high portion of this growth is concentrated in the increased sales of certified or verified sustainable and speciality coffee, which rose from 499,000 bags in 2001 to 2 million bags in 2012, a 299% growth rate. This means that the speciality and certified segment's share in total exports from Colombia changed from 5% in 2001 to 28% during 2012, see Figure 5.10.

Also as part of the value-added strategy, during the last decade Colombia has advanced in the creation of a legal framework in order to protect the Colombian origin (FNC 2013a, FNC 2013b, FNC 2014). The Colombian coffee authorities have been supporting efforts to get unique regional Colombian coffees into the market place through the implementation of a strategy of Geographical Indication in the European Union, Denomination of Origin in the Andean Community Countries and Certification Marks in United States and Canada, as well as a developing new trademarks in over 140 countries worldwide (Giovannucci and Samper 2009, Lozano, Samper et al. 2012, Samper 2012).

Figure 5.10 Volume of Colombia exports million bags of 60 kg. 2000 - 2011



Source: FNC data (FNCa 2010, FNCa 2011, FNCc 2011, FNC 2012, FNC 2013b)

Colombia have reached important advances in this strategy. After a two year process, in August 2007, "Café de Colombia" was awarded status as a Protected Geographical Indication (PGI) in the European Union (Reina, Silva et al. 2007, Hughes 2009). The first non-European food product granted a registered Geographical Indication under European Union law (Hughes 2009). Also, the Swiss GI legislation recognized the Café de Colombia as a PGI since 2013. This recognition grants special status and protection for Colombian coffee in the 27 countries that belong to the European Union. Additionally, Since 2011 FNC have registered at least three regional "Denominaciones de Origen" in Colombia (e.g. Cauca, Huila, Nariño), that have been also successfully registered in Perú, Ecuador and Bolivia (FNC 2013a, FNC 2014).

According to the coffee authorities, the greatest challenge that the coffee sector institutions face is to convert the designation of origin of Colombian coffee and the regional designations of origin into tools that allow the producers to receive higher earnings (Reina, Silva et al. 2007). However, the amount of firms authorized to use the PGI is still very low - 22 roasted coffee brands owned by seven European customers (FNC 2014), and economic benefits received through price premiums are not yet perceived by coffee growers interviewed during field work.

5.6.1 Trends in the trade of sustainable and specialty coffee in Colombia[34]

Producers adhered to various combinations of social, environmental and economic certifications such as Fairtrade, Utz Certified, Rainforest Alliance or Organic, which are

[34] Data provided in this section were obtained mostly from the FNC as exporters were reluctant to reveal their numbers. However, FNC exported nearly 30% of the total coffee exports and nearly 50% of the speciality coffee in 2011. As such, its figures are representative.

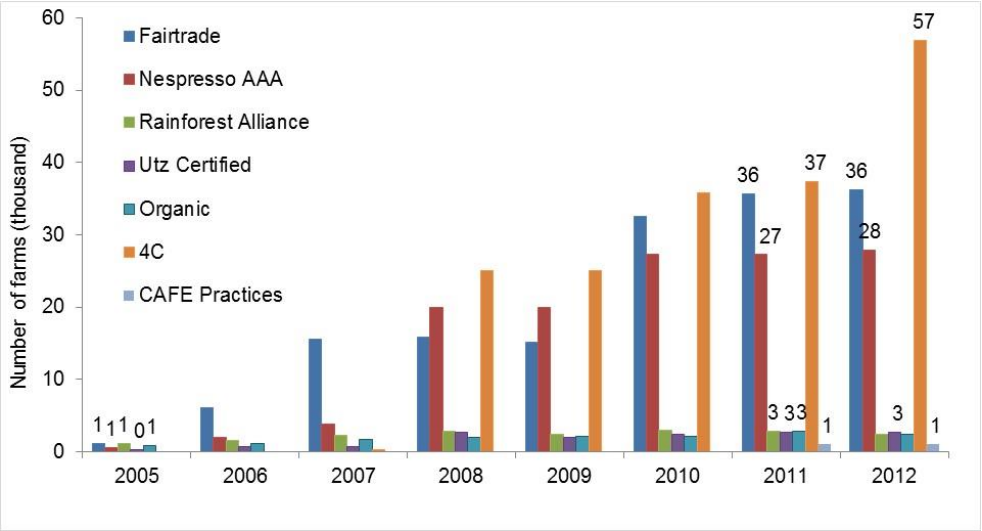
independently certified by accredited third party entities. Additionally, producers have adopted verification-based schemes created by private company initiatives such as Nespresso AAA from Nestlé-Nespresso, C.A.F.E. Practices from Starbucks or 4C which does not imply the rigor or cost of a certification process relying on external verifiers or third party guarantees.

In the speciality coffee segment, producers sell origin and *preparation*[35] coffee. The origin coffee come from a specific region or farm, and possess unique qualities due to the fact that they are grown in unique locations. Clients prefer this coffee for its unique taste and aroma. This can be broken into three subcategories: (i) regional coffee, deriving from a specific region and recognised for their particular conditions, are sold to the final consumers without being mixed; (ii) exotic coffee is grown in specific locations under exceptional conditions; they possess unique tastes, textures, aromas, and colours; (iii) estate coffee is produced on a single estate or farm, from a single harvest, they have a single post harvesting process that allows for an outstanding quality product, consistent over time.

The interest among coffee growers for the adoption and compliance of sustainable standards as well as the mass affiliation of coffee producers by different private certification programmes and verifications has experienced substantial growth rates in the last few years, although this has been diminishing over the last three years for some initiatives in particular. According to the FNC statistics in 2012, there were 130,000 farms involved in the production and trade of coffee complying with the competitive requirements of voluntary sustainability initiatives occupying an area of 366,000 hectares, around 25% of the 512,000 Colombian coffee growers and about 37% of the total coffee growing area. Without any doubt, the interest for the adoption and compliance of sustainable standards and verifications has experienced a substantial growth rates in the last decade, as in 2005, there were 4,051 farms with around 15,558 hectares dedicated to the growth and trade of sustainable coffee, Figure 5.11.

[35] Preparation coffee is a term that refers to the beans that has a unique appearance in its size and form, which makes them desirable by international clients. They are sought after by certain clients that are interested in offering a consistent and homogeneous product.

Figure 5.11 Evolution in the number of farms verified or certified 2005 - 2012



Source: Author's own calculations based on FNC data

In terms of number of certified farms, this growth has been mainly concentrated in three labels: 4C, Fairtrade and the Nespresso AAA Quality Program that represented 93% of the farms in 2012 (44%; 28% and 21% respectively). According to the same FNC data, since 2005, the number of farmers adhering to the certification Fairtrade and the verification Nespresso AAA have shown the highest growth rates. Meanwhile the growth rates for labels such as Rainforest Alliance, Organic and Utz Certified were considerably minor. In fact, the number of farmers affiliated to these programmes have diminished during the last years. For example, between 2011 and 2012 these reductions were 13%; 2% and 12% respectively. In this sense, field interviews revealed that high prices for conventional coffee, added to relatively lower price premiums for value added coffee compared to conventional, and higher production costs have discouraged producers to keep engaged in this market, see the discussion below by Figures 5.14 and 5.16. Regarding the 4C initiative, this emerged from virtually nothing in 2007 to accounting for 44% of all certified farms in 2012, however, these numbers must be seen with caution as the procedure to verify and monitor farms using this corporate business model differ greatly from the initiatives mentioned above in Figure 5.11.

There are no available statistics about the number of producers selling origin or regional and preparation coffee to the local market. In particular, several field interviews revelled that producers do not know that the coffee purchased by the cooperatives is labelled as such, or even so that these coffee is sold abroad offering the characteristics of an specific origin or region. In this sense, for example, data collected from the CRECE-COSA survey (García, Ochoa et al. 2013a) in Colombia during 2009 and 2011 among 3,372 coffee growers pointed out that only between 2% and 5% of the coffee growers surveyed recognized having sell regional coffees. The remaining producers signalled that they do not sell or do not know if their coffee was labelled as Regional.

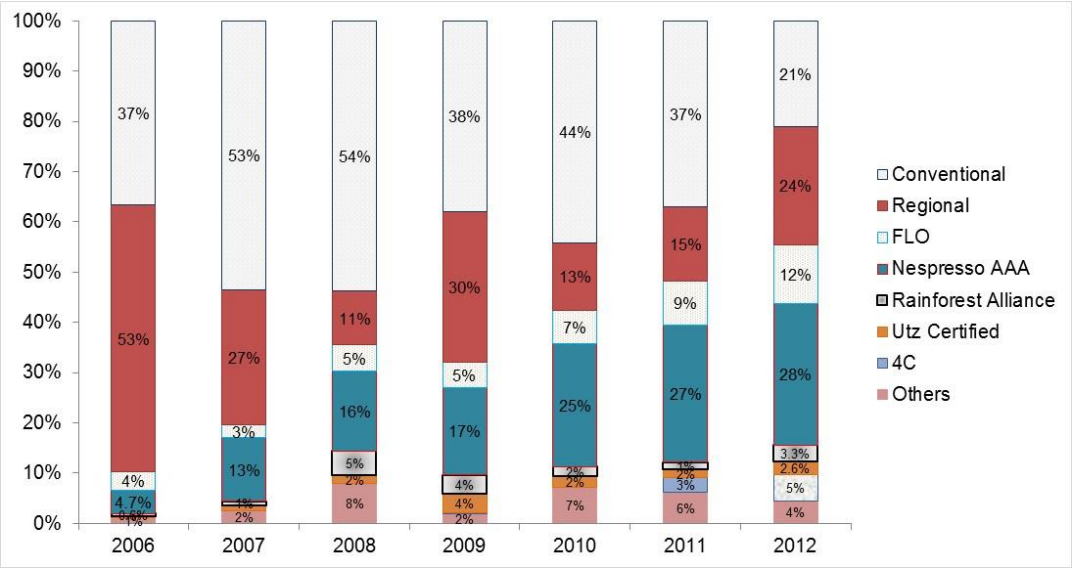
This situation contrasts those producers affiliated to sustainable private certifications and verifications, as most of the coffee growers are aware that they are certified, that their coffee or at least one share of the harvest is traded under one specific label. Even so, most of them are aware of the traceability of their coffee and aware of their coffee's particular intrinsic characteristics.

Regarding the domestic market for conventional, speciality and sustainable coffee, intermediaries were reluctant to provide discriminated information about their sales of speciality coffee. So the analysis about the current trends in the volume of coffee purchased and farm gate prices between 2006 and 2012 were obtained using data from 10 coffee growers' cooperatives located in four different regions in Colombia (its acquisitions were around 2.1 million bags of 60 kg in 2006 and 1.6 million bags in 2012). These cooperatives buy nearly 50% of the coffee purchased by 35 cooperatives of coffee growers operating in Colombia.

In this sense, remarkably, producers have systematically been increasing the value added to their harvest by adhering to different sustainable initiatives and gaining market shares. Figure 5.12 exhibits the percentage distribution of the volume of coffee purchased by these cooperatives.

It shows, for example, how the acquisition of Nespresso AAA increased by 260% between 2006 and 2012 and its share of the total coffee purchased rose from 5% to 28% between 2006 and 2012. Meanwhile, Fairtrade coffee purchases increased by a growth rate of 103% and its participation moved from 4% to 12% of the total in the same period. Meanwhile, other third party certifications' systems such as Rainforest Alliance and Utz Certified, increased their participation to nearly 3% of the total purchases of coffee. In contrast, regional and conventional coffees reduced their participation, the first one from 53% to 24% in the same period, a negative growth rate of -68%, and the second one from 37% to 21%, a negative growth rate of -58%. Quantitative and qualitative data collected at different nodes of the Colombian coffee value chain revealed that within the segment of sustainable and speciality coffee there are clear differences in the way foreign buyers have modified their sourcing strategies to deal with the scenario of both high prices and differentials for Colombian Arabicas compared to other Mild Arabicas that the industry witnessed between 2008 and 2011. According to different sources interviewed – members of coffee grower cooperatives, the export sector as well as representatives from some private initiatives, for example, Nestlé-Nespresso structured an aggressive sourcing plan in order to ensure a consistent and reliable supply of coffee for its Nespresso AAA Sustainable Quality Programme.

Figure 5.12 Cooperatives´ coffee acquisitions by initiatives 2006 – 2012



Source: Author's own calculations based on data from 10 coffee growers' cooperatives[36]

Based on the available quantitative information, it must be highlighted that the market share gained by Nestlé-Nespresso came mostly at the expense of that share held by the Regional coffee. In this sense, from the 10 cooperatives that provided data, six purchased coffee for the Nespresso AAA programme. While in 2006 the share of regional coffee purchased by these six cooperatives was 62% and Nespresso AAA was 22% of the total purchases of all types of coffee, during 2012 these shares were to 2% and 61% respectively.

This is a very interesting finding. In terms of many representatives of the extension services interviewed during the field work, as well as buyers at the cooperative level, the trade of regional coffee by the cooperatives was an option before private certifications' initiatives began their operation and once they had begun to offer comparatively higher premium prices and additional services to coffee producers. In this sense, pointed out, that the producers of regional coffee became the first choice for certifications' settlers to adhere to their programmes. This is due to the fact that producers of regional coffee have certain advantages compared to conventional producers, both in terms of the quality of the coffee they produce as well as the knowledge regarding the production techniques. Therefore, these findings imply that "origin-based 'trust' narratives also tend to be replaced by 'certified' quality systems that partially de-link quality from place" (Ponte and Gibbon 2005: 13).

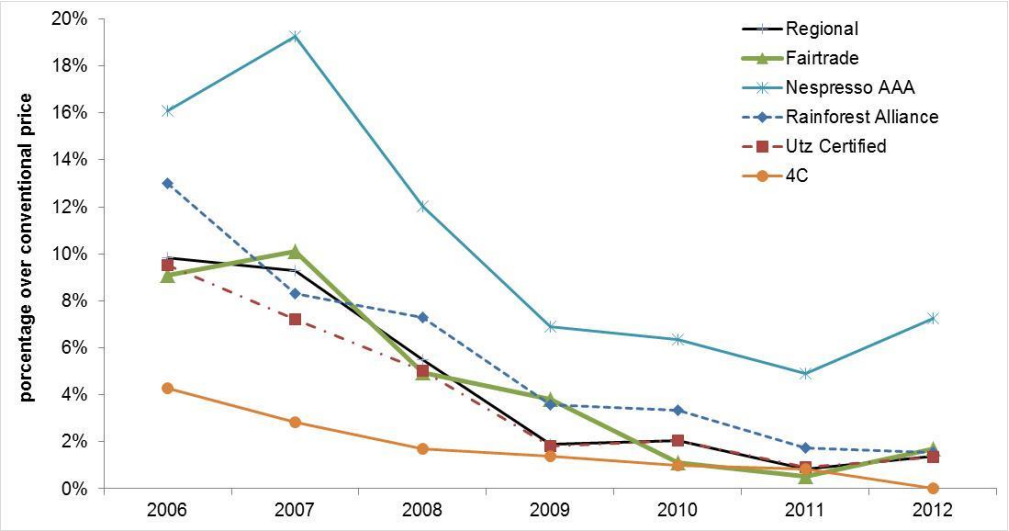
Figure 5.13 shows the evolution of the price premiums for specialty and certified coffee paid to the cooperatives to the coffee growers as a percentage of the farm-gate price

[36] Cooperatives from: Occidente de Nariño, Norte de Nariño, Cauca, Risaralda, Coocentral, Cadefihuila, Alto Occidente, Norte de Caldas, Anserma and Aguadas.

for conventional coffee for those selling parchment coffee to Fairtrade, Utz Certified, Rainforest Alliance, Nespresso AAA, 4C and regional coffees between 2006 and 2012. Field interviews revealed that price premiums that must go the farmer are setting between the trader or roaster abroad and the exporters in Colombia. In general, data from this figure reveals two contrasting situations. First, that specialty and certified producers have been receiving higher farm-gate prices compared to conventional producers, and second, that the farm-gate price gap between conventional and speciality coffee has been closed continuously as the price premiums for certification have been eroding without exception since 2007.

For example, between 2006 and 2011, producers selling Rainforest Alliance, Regional coffees, UTZ Certified and Fairtrade coffees suffered higher falls in the price premiums: 5.9; 5.5; 5.1 and 3.8 times the price premium from 2006. Meanwhile, Nespreso AAA premiums dropped 1.6 times. Regarding 4C producers, there was not price premium during 2012. For example, during 2012, the price premiums for certification were around 5% above the conventional coffee for all the value added initiatives, with the exception of those farmers selling to Nespresso AAA whereby the price premium above conventional coffee was 7%. According to the coffee growers interviewed at farm level and focus groups, their perceptions were that while every year the production costs got higher, the rewards for their coffee were less than expected and have diminished over time.

Figure 5.13 Price premium pay to specialty coffees as a percentage of the conventional coffee price



Source: Author's own calculations based on FNC databases

In the case of Fairtrade, for example, for almost three years the farm gate price for Colombian conventional coffee were above both the minimum price settled for the Fairtrade organisation for certified washed Arabicas of USD 125 cents per pound and a

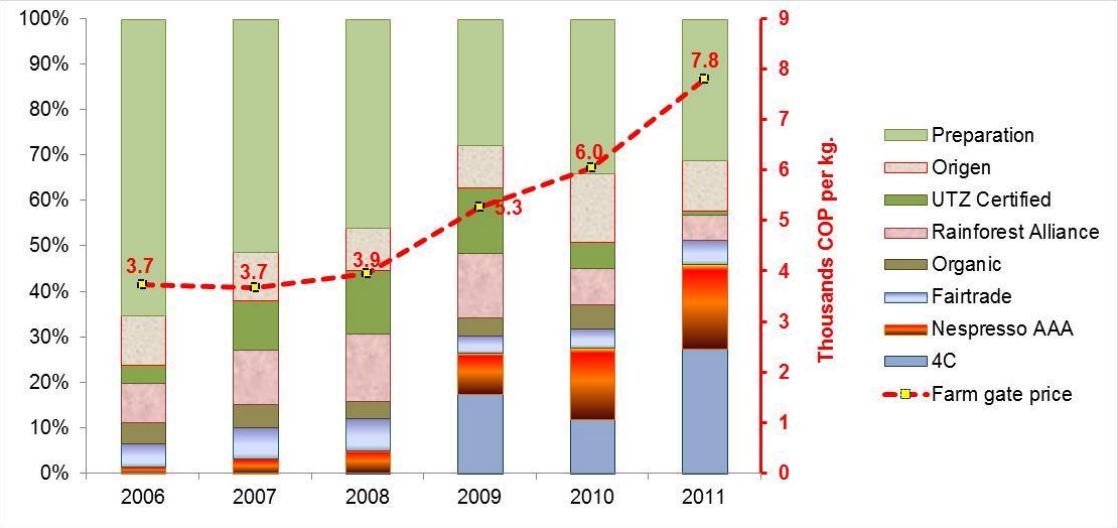
social premium of USD 10 cents. This situation, according to members of the cooperatives and the export sector interviewed, discouraged exporter organisations who adhered to the programme as these were forced to pay the conventional price (above the Fairtrade floor price) plus the social premium, otherwise they would be suspended. As a result of this situation, the Fairtrade organisation recognised the need to reconfigure its strategy in order to address the challenges that arose during the period of high prices (FAIRTRADE 2010a, FAIRTRADE 2011a, FAIRTRADE 2011b, FAIRTRADE 2011d). As such, Fairtrade International, on March 15th 2011, increased the Fairtrade Minimum Price to USD 140 cents per pound, while the Fairtrade Premium increased to USD 20 cents per pound (FAIRTRADE 2011b). Despite this change in Fairtrade´s policy, the new Fairtrade floor price, as well as its premium, was still below the price in the conventional market during 2011.

Changes in coffee prices and price premiums have also affected trends in exports by types of initiatives. As a result of the sharp rise in prices, the answer from the industry has been to try to substitute Colombian Milds with other origins to contribute to the relief of the upward pressures on market prices and high price differentials for Colombian Milds and in this way reduce the value of the premiums paid to the producers. In this sense, Figure 5.14 shows how exports of some sustainable initiatives have grown steadily while farm gate prices remained relatively unchanged until 2008. However, once prices began to be rise in 2009, the upward trend in coffee purchases ceased – see for example Rainforest Alliance and Utz Certified. Contrastingly, data shows that total exports commanded by the corporate sector and industrial firm initiatives as the Common Code for the Coffee Community (4C) and Nespresso AAA have been growing without interruption since 2006. In this sense, for details of field work and interview material among different exporters, while buyers of Rainforest Alliance and Utz Certified coffees moved to Central America to substitute most expensive origins as are the Colombian milds (see Figure 5.3 about price differentials), those buyers from Nespresso AAA and 4C decide to buy in Colombian due to processor requirements that need Colombian coffee for their blends.

As such, for example, while the share in FNC's total exports in 2006 for these two initiatives at the bottom of each column was 1%, in 2011 both reached 44% of the total exports of FNC's value added coffee. These two initiatives surpassed by far both those labels relying on external verifiers or third party guarantees as well those initiatives that pointed to preserve the origin. Interestingly, Figure 5.14 shows how Organic, Fairtrade, Utz Certified and Rainforest Alliance reduced its participation from 24% to 16% in the same period. In the particular case of Rainforest Alliance and Utz Certified, its participation in total sales grew from 12% during 2006, to 28% in 2008, and then dropped to 6% during 2011. Meanwhile the share of Fairtrade and Organic reduced its participation slightly. Similarly, coffee preparation reduced its share from 64% to 30% in

the same period while the origin's (regional) dropped its share from 15% in 2010 to 10% in 2012.

Figure 5.14 FNC´s share of exports by initiatives and trend in farm gate prices 2006 – 2011



Source: Author's own calculations based on FNC data

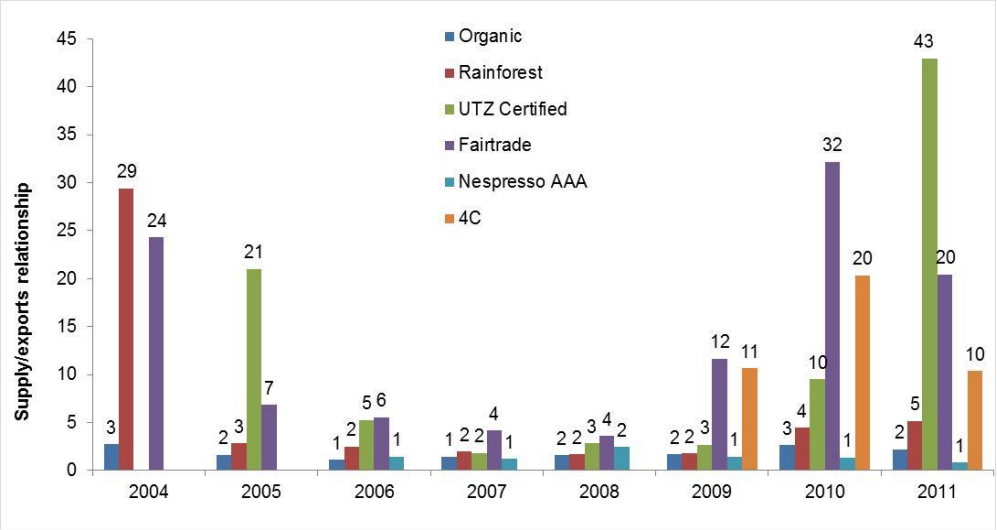
As such, at least in Colombia, buyers of third party certification initiatives have managed the trade of coffee as a contra-cyclic business. Hence, in times of low prices for conventional coffee of certain origins and relative low price differentials (i.e. Colombian Arabicas), foreign buyers are willing to buy coffee as well as pay a substantial certification premium. However, if prices for conventional coffee are high and price differentials are substantial, so the incentives to buy some particular origins diminish as buyers of certified coffee substitute these types of coffee for cheaper origins while reducing the certification premium that has been paid to coffee growers during periods of low prices. In the case of Rainforest Alliance and Utz Certified, for example, the interviews indicated that foreign buyers substituted costlier Colombian Milds with cheaper Arabicas from Central America in order to increase their margins, to contribute to relief on the upward pressures on price differentials and more importantly to keep the fast growing rates in the sales of certified coffees worldwide depicted in the previous chapter.

In contrast, as was depicted above, Nestlé–Nespresso has followed an alternative strategy to ensure a consistent and reliable supply of quality coffee for its Nespresso AAA programme. Regarding regional coffee prices and sales, its evolution is difficult to predict as demand is dependent on the buyers´ stocks abroad. As such, producers of coffee linked to specific geographic locations do not receive additional benefits compared to conventional producers. Although buyers offer higher prices compared to Fairtrade and Conventional, they do not provide clear commitments to help producers

improve their quality or productivity. Even so, producers are not fully aware of what type of coffee they are producing, or what the final market is, as purchasing protocols do not differ from regulatory systems operating in the conventional market. In fact, according to many of the extension services, representatives interviewed during the field work stated that being a regional coffee producer is the first step to joining a certified scheme.

One additional issue, regards to the oversupply of the production of coffee compliant with the requirements of private sustainable standards and the decreasing share that is actually sold as certified and effectively is receiving a price premium. Similarly, as was depicted in the previous chapter about the global oversupply of certified coffee and the large gap between the sustainable coffee produced and purchased as such, in Colombia there is a huge difference between the availability of certified coffee and those which is actually purchased of certified for some initiatives in particular, Figure 5.15.

Figure 5.15 Relationship between supply and exports of some sustainable certifications and verifications 2004 - 2011



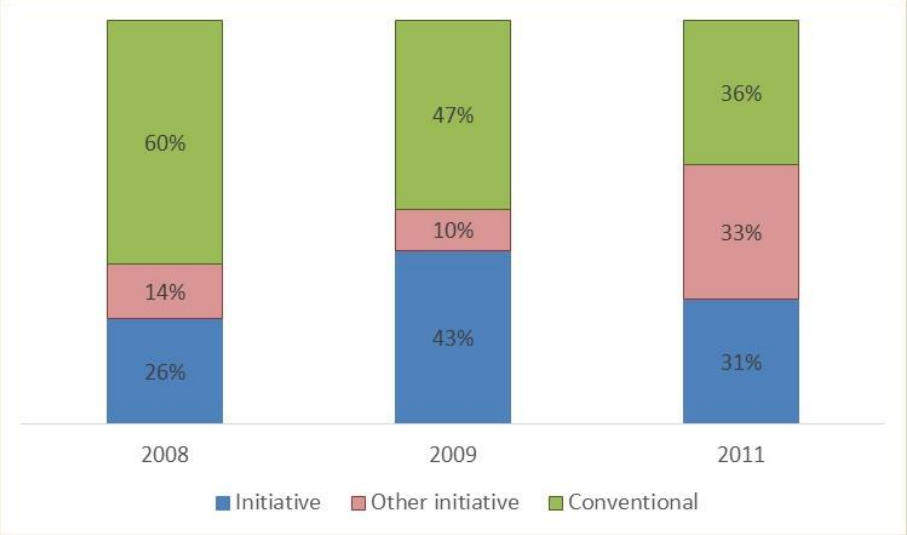
Source: Author's own calculations based on FNC databases

It is well know that a portion of a farm's output may not meet the quality requirements of a buyer seeking certified and speciality coffees and must therefore be sold as conventional, and also in other situations, the buyer does not need to purchase the whole of the supply, and the producer must sell the remainder to other buyers as conventional coffee, even though the entire farm may be certified (Giovannucci, Liu et al. 2008). However, the increase in the number of farms adhered to the production and trade of sustainable coffees, plus the reduction in exports for some initiatives as buyers moved to other cheaper origins, has implied that the over-supply of coffee has been growing steadily since 2009, and reached unprecedented levels in 2011 for some of the most important initiatives, Figure 5.15. For example, according to FNC databases, in the

case of the UTZ Certified, production levels were more than 42 times the sales, with a total of around 421 thousand bags of 60 kilogram produced in 2011; meanwhile in the same year Fairtrade compliant production were 20 times above the sales compliant with the standard, for 4C there were a 10:1 supply/sales relationship. In contrast, in the case of Nespresso and Organic there is a partial equilibrium which implies that almost all coffee which complies with its quality standards is purchased by the exporters.

Interviews revealed that one answer to this situation has been the adoption of other certifications (double, triple or even more certifications). Although there are not official statistics about the most common cases of double or triple certification, survey evaluations have indicated that there are a trend toward multiple certifications at farm level in Colombia (double, triple or even more certifications). Figure 5.16 depicts how a growing number of farmers are selling a higher share of their harvest adhered to voluntary sustainability standards, however the amount of coffee sold under the original initiative to which the coffee growers adhered is slightly decreasing (García 2012).

Figure 5.16 Trends towards multi-certification with voluntary sustainability standards in Colombia 2008 - 2011



Source: García, C. (2012)

Based on field work interviews this behavioural changes are associated to the performance of voluntary sustainability standards at farm level in which more sustainable coffee is available that is actually purchased as sustainable. Additionally, this was propelled by at least two situations: i) the fact that producers do not have to pay for the certifications and audit cost, and have been receiving significant levels of aid in kind, training and access to credit and ii) producers' main motivations of improving their economic and social viability. Not only by reducing the risk of relying on a single scheme and assuring a higher income through price premiums and accessing new markets, but also building economies of scale and gaining some efficiencies at farm level.

However, as the previous Chapter highlighted, multi-certification could have important political economy implications. This situation can exclude the most vulnerable producers, in particular, small farmers who face many challenges and difficulties in meeting the demands or coordination requirements of private standards for a start (Neilson 2008, Giovannucci, Liu et al. 2008a).

5.7 Supporting small farmers' in standards compliance

In the coffee sector, during the last decade there has been an important involvement of the private sector in order to both ensure coffee quality and growing demand requirements as well as the constant sourcing of raw materials. Trading companies, local exporters, processors or retailers have showed great capacity establishing public private partnerships (PPP) and leveraging resources to assisted producers in meeting the required standards, including financial assistance and technical support to adjust production systems (Gibbon 2001, Humphrey and Schmitz 2001, Fulponi 2006, Porter and Kramer 2006, Humphrey 2008, Neilson 2008, Raynolds 2009, Porter and Kramer 2011). This fact has been particularly evident in the trade of specialty Arabicas coffees (Neilson 2008), where corporate competition for a long term supply of highest quality cherry coffee has promoted business linkages and agricultural supply chain improvements between different stakeholders (Jenkins, Akhalkatsi et al. 2007, IFC 2008). Buyers have moved to diversified upstream toward crop production and have been becoming involved in smallholder agricultural services (Gibbon 2001, Schroeder and Guevara 2009). Additionally, NGOs, multilateral and bilateral donors aid agencies, have embarked in different public-partnerships to provide smallholder coffee farmers with the skills and capacities needed to increase their incomes and connect to high-value markets (Daviron and Ponte 2005, Jenkins, Akhalkatsi et al. 2007, IFC 2008, ACDI/VOCA 2009a).

Motivations for these initiatives have come, not only as a response to consumers' concerns for sustainable production, quality and social conditions in farming communities (Jenkins, Akhalkatsi et al. 2007), or as an opportunity to increase the value of the brand and capturing some of the market share controlled by more stringent and internationally accepted TPC institutions as Fair Trade or other initiatives led by the coffee growers (Giovannucci and Ponte 2005, Courville 2008), but also to attract ethically conscious investors or from fear of being the target of negative publicity campaigns (Alvarez 2009, Alvarez 2010). To reach these goals corporate companies have redesigned their procurement systems, to assure a reliable supply of specialized coffees by helping producers to increase productivity, improve quality, reduce environmental degradation that limits production volume and, ultimately, to achieve higher prices (Porter and Kramer 2011). Of course, buyers benefits from the quality and quantity improvements that farmers achieve (Nestlé-Nespresso 2005).

However, despite the important role of donor support, doubts arise about its long term viability, particularly for the small farmers whose extra cost of meeting the standards – such as the costs of labour and of certification, is not compensated by the expected revenue achieved due to the size of their operations, either after getting improvements in quantity, quality or higher price premiums (Fulponi 2006, Potts, Opitz et al. 2007). For that reason, policies aimed to supporting producers and enhancing their upgrading capabilities need to be realistic (Humphrey 2005, ECLAC 2008). Moreover, one additional concern remains about the fact that donors could choose to work only with the most advanced producers, with high chance of success, thereby marginalising the poorest of the poor farmers.

5.8 Conclusions

Although statistics from the cooperatives and FNC revealed that producers are selling a higher fraction of their whole harvest under different initiatives that add value to their coffee, it is also true that oversupply from some initiatives have forced producers to sell their remaining certified coffee production to the conventional market without any value added or premium. Meanwhile, producers are facing lower price premiums for their certified coffee, while those differentiation strategies that link quality to a specific geographic location have not led to increased sales profits and sustainable incomes.

This is a critical situation for those producers who have viewed differentiated coffee, sustainable coffee in particular, as a potential tool to achieve economic sustainability. One of the main motivations for producers to adhere to sustainable initiatives are the price premiums and access to new markets that these initiatives offer compared with conventional coffee.

Qualitative interviews with the personnel of the extension service, the export sector and personnes at cooperative level indicated that this situation is threatening the coffee chain and farmers' economic viability, in particular, for some initiatives whose rewards are not good enough to cover the compliance cost. Under the situation depicted above, and based on field interviews, value added coffee producers have been losing their incentives to adopt social, economic and environmental sustainable production practices added to quality requirements, in particular, if their colleagues who are selling coffee in the conventional market are receiving a similar price without incurring in higher production cost associated with new competitive requirements for value added coffee production.

As will be presented in the Chapter 7, production costs for hectare for value added initiatives are significantly higher compared to conventional producers, even though certification costs and the fees needed to keep the status of certified are been afforded

by producers' associations and coffee exporters or the share of unpaid labour for certified producers have been increasing steadily. Money is needed to pay for the costs of the conversion process, adjusting the production systems as well as the necessary investments in production facilities such as buildings and physical equipment, added to other types of recurrent and non-recurrent costs of compliance including the cost of obtaining the knowledge about the standards and certifications (Humphrey 2006a, Potts, Opitz et al. 2007). These costs are expensive and onerous and may take years and a prolonged investment before costs are recouped, particularly without institutional support, access to financial resources and credit, and in the same manner, the provision of training to obtain the knowledge about standards and certifications.

As a consequence of this situation, not all of the producers can take advantage of these programmes. In particular, for smallholders with farms too small to provide a sustainable livelihood. As such, targeting specific market niches was an attractive alternative for only a portion of Colombian coffee and not all of the coffee growers can take advantage of these new trends (Reina, Silva et al. 2007). As such, differentiated coffee including speciality and certified markets are a viable solution only for those coffee growers with the scale, the microclimate advantages and the necessary skills to produce quality certified products.

In this sense, speciality qualities are linked not only to specific geographic locations that make it possible to differentiate these indefinitely but also to good practices in the production and post-harvesting processes for the coffee produced in those regions. This means increased access to basic education and training as well as more organisation at the cooperative or association levels for those producers with potential for the production of speciality coffees. Taking part in the specialty coffee value chain is not as simple as it seems. Such market-oriented developments are all knowledge intensive in the production, processing, and marketing chain – particularly the adoption of different kinds of VSS. Additionally, costs of compliance with standards can act as an absolute barrier to compliance and pose a significant risk of exclusion from markets, especially for smaller producers (Henson and Jaffee 2006). As was mentioned above, the costs associated with its adoption are substantial for any producer, but it varies inversely with the size of the farm and the expected revenue could not compensate for the cost of meeting the standards in the smaller farms due the size of the operations (Potts, Opitz et al. 2007).

CHAPTER SIX
Voluntary sustainability standards (VSS) in the coffee sector: Does participation in differentiation channels affect coffee growers' upgrading strategies?

6.1 Introduction

This Chapter will discuss how participation in two distinct VSS, such as Fairtrade and Nespresso AAA, affected the upgrading strategies of coffee producers in the specialty coffee value chain.

Chapter 2 illustrated to what extent the literature provides answers to these questions, and identified knowledge gaps. Chapter 3 explained the methodology used to answer the two main questions addressed in this thesis. Chapter 4 and 5 give the global and local context respectively, while Chapter 7 will address, not only the issue of farm level returns, but also the risk and insecurity to which farmers are exposed.

This chapter will contribute to the debate on the impact of the adoption of VSS on the upgrading strategies of coffee growers in a four-year period. In addition, this chapter will also explore whether coffee growers who adopted voluntary standards were more likely to receive institutional support to help them overcome their most important limitations to further upgrading. This thesis proposes a model to ascertain whether the affiliation of coffee producers in Fairtrade and Nespresso AAA, compared with their respective control group of producers, have resulted in significant difference-in-difference for a set of 15 matched indicators which shed light on farmers' capacity to innovate in different spheres of economic upgrading in the markets governed by private standards.

This model has two development areas that are determinant for producers to build their competences and upgrade: (i) Institutional arrangements to facilitate upgrading; and ii) investments and adoption of good agricultural practices to improve upgrading trajectories.

The source of data to address the central questions of this chapter is the set of results from three rounds of field surveys carried out in 2009, 2010 and 2012. The sample is a group of Fairtrade producers, two groups of Nepresso AAA producers and a comparable control sample. As was mentioned in Chapter 3, this thesis combines impact evaluation techniques to construct statistical comparison groups. Propensity Score Matching (PSM) was implemented in combination with Difference in Difference approach (DID). This allowed for control of selection bias and the influence of independent factors.

This chapter is structured into four sections. After this introduction, the second section discusses the main development areas, criteria and indicators to empirically test the first research question. This section is divided into two sub-sections to develop each one of the areas mentioned above. In the third section, a farm size analysis is carried out for the same development areas developed in section two. Finally, in the fourth and final section, the main findings and conclusions are stated.

6.2 Development areas

In value chain literature there is scarce research providing statistically valid data with reliable designs on the medium to long term impact of participation in different VSS on the upgrading strategies of agricultural producers in the developing world (Von Hagen and Alvarez 2011, Ruben and Fort 2012, Ruben 2014), and smallholders in particular. Additionally, there are gaps in the global value chain literature on the role of institutions and organisations play to provide the support farmers need to address their main limitations or constraints and comply with the stricter requirements imposed by voluntary sustainability standards (Neilson and Pritchard 2009, Ponte, Kelling et al. 2014).

There is mounting evidence to argue that small producers face deeper constraints and restrictions which limit their capacity to participate effectively in value chains governed by standards (Jaffee, Henson et al. 2011, Lee, Gereffi et al. 2012, Ruben 2014). Small producers face competitiveness bottlenecks to innovate in different spheres of upgrading, such as institutional weaknesses, minimal savings and lower levels of household wealth, lack of infrastructure and capital, reduced managerial skills and minimal levels of literacy, higher transaction cost, limited scale and low productivity (Bain, Deaton et al. 2005, World Bank 2007). Moreover, producers who want to adopt voluntary sustainability standards must finance several types of direct and indirect costs, both recurrent and un-recurrent, involved with standards' compliance and meeting certifications' requirements (Potts, Opitz et al. 2007). Some of these costs include, the time and cost of training to stay updated on the requirements of standards and certifications, the start-up and transition costs, and those expenses incurred in order to maintain the certified status (Humphrey 2006a, Potts, Opitz et al. 2007).

Therefore, as mentioned in Chapter 2 and 3, in light of the evidence underlining the difficulties faced by small farmers, institutions and organisations in the public and private sector should play a key role to support producers to close the gaps quickly and upgrade (Humphrey and Schmitz 2001, Giovannucci and Purcell 2008, Humphrey 2008, Henson, Jaffee et al. 2009). There is a general consensus that collaboration among stakeholders is needed to support small farmers' ability to meet standards and facilitate the investments needed to improve their upgrading strategies. This includes the

provision of public goods, access to new agricultural technology and R&D, improvement of managerial skills and the resources to finance the investments in production facilities, which are all necessary to further upgrading trajectories.

Subsections 6.2.1 and 6.2.2 analyse the two development areas or principles that are determinant for producers to build their competences and upgrade: (i) Institutional arrangements to facilitate upgrading; and ii) investments and adoption of good agricultural practices to improve upgrading trajectories.

6.2.1 Institutional arrangements to facilitate upgrading strategies

This section looks at whether certified producers are receiving the institutional support needed to overcome four important constraints that limit their ability to meet certification's competitive requirements imposed by voluntary sustainability standards: (i) support dealing with costs related to certification, inspection and paperwork; (ii) access to finance and credit; (iii) access both to subsidies and/or cash transfers, as well as aid in kind; and (vi) access to training and technical assistance.

6.2.1.1 Support dealing with costs related to certification, inspection and paperwork

Table 6.1 below shows evidence that nearly 100% of the producers did not pay for the certification costs and fees required to maintain certified status within one or other of the programmes, including the paperwork for the certification. As was mentioned in the section 3.7.1.1, this is a result of the involvement of different actors, in the conversion process who usually subsidise the cost of certification.

This information is consistent with the data collected during field work. Field semi-structured interviews with both Fairtrade certified farmers, representatives of relevant stakeholders, as well as the focus group discussions with Nespresso producers, revealed that during the last ten years, there has been important involvement of the private sector and other stakeholder to help small farmers meet the challenge of conforming to private standards or fulfilling new buyer's demands. Most of the efforts have been directed to finance both the start-up costs and the recurrent costs of certification, as well as the training to gain the skills to adopt new production techniques (MIDAS 2009, Yamashita 2010, FNC 2011a, FNC 2011b, FNC 2011c). These combinations of efforts have been aimed at ensuring both coffee quality as well as increase volume to assure growing demand requirements as well as the reliable sourcing of raw materials. However, there were no impact evaluation studies on the outcomes of these interventions.

Table 6.1 Certification and verification cost among Fairtrade (FLO) and Nespresso paid by different stakeholders

	Data from	Nespresso AAA_1	Nespresso AAA_2	Fairtrade
Paid for the certification cost or verification	2008	100%		97%
	2009	100%	100%	99%
	2011	100%	100%	100%
Paid for the inspection cost	2008	100%		100%
	2009	100%	100%	99%
	2011	100%	100%	100%
Paid for the certification paperwork	2008	98%		92%
	2009	94%	95%	97%
	2011	99%	95%	100%

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

As such, these findings do not support the argument that the direct certifications' cost and the fees needed to keep the status of being certified can act as barriers that impede small farmer participation in high value markets (Bain, Deaton et al. 2005, Hatanaka, Bain et al. 2005, Humphrey 2006a, Giovannucci, Liu et al. 2008, Giovannucci and Purcell 2008, Neilson 2008, Kaplinsky 2010).

However, some concerns remain about the sustainability of this support in the long term, what would happen if donors choose not to support small farmers anymore? Particularly those who are certified with more than one voluntary sustainability standard. In this sense, based on the interviews carried out during the field work, and this research's findings on the returns and profitability of these initiatives, it is unlikely that small and medium sized farmers already involved in this market could afford the costs involved in the adoption of standards.

6.2.1.2 Access to credit, subsidies and/or cash transfers, and aid in kind[37]

An important question is whether coffee producers included in Fairtrade certifications and Nespresso schemes, compared with their respective control groups, had better access to credit facilities and were able to access higher levels of aid transferred through both subsidies and/or cash transfers, as well as aid in kind during the surveys of 2009 and 2011. This sub-section analyses the outcomes of three key variables: (i) access to credit; and (ii) access both to subsidies and/or cash transfers, and aid in kind.

[37] Questions about these issues were included in the surveys of 2009 and 2011 by request of the author.

Access to credit

Limited access to credit or finance is one of the most important restrictions that prevent producers from making the necessary investments to innovate in different spheres of upgrading and participate competitively in the specialty value chain. In particular, literature highlights that smaller producers face the greatest challenge to access to credit. If coffee growers want to participate in value chains governed by VSS, then access to credit and financial resources is needed to invest in new buildings, physical equipment, obtaining certifications and additional inputs required to comply with their competitive requirements. As such, limited access to financial resources is a barrier to further upgrading trajectories.

In this sense, the survey found that certifications did not lead to more access to credit.[38] Over time there were no statistically significant differences between Nespresso[39] and Fairtrade (FLO) and their respective control groups. Despite the fact that a statistically significant higher proportion of certified farmers has access to credit compared to control producers during the surveys, at endline these differences disappear (line 1 and 4 Table 6.2). For example, despite significant differences favouring producers affiliated to AAA_2 compared to AAA_1 producers in 2011, the comparison over time did not reveal significant difference in difference (line 7 Table 6.2).

Access both to subsidies and/or cash transfers, and aid in kind

Table 6.2 reveals that over time the involvement in Nespresso certification negatively influences access to subsidies and/or cash transfers compare to conventional producer (line 2 Table 6.2). By contrast, the analysis reveals that farmers selling Nespresso AAA_1 received at endline significantly more aid in kind than their respective control groups selling to the conventional market (line 3 Table 6.2). Meanwhile, although the data revealed significant differences between Fairtrade and conventional farmers during the second and third survey, over time the involvement in the Fairtrade certification compared to conventional producers does not generate significant difference in difference between the two groups of farmers both for the levels of subsidies or cash transfers, as well as for the aid in kid received (line 5 and 6 Table 6.2). Additionally, the comparison between the two groups of Nespresso producers in order to capture the

[38] To interpret DID results is important take into account the differences between years for both certified and controls as well as the differences within years between the target and controls. When such differences within a year are significant, then a mark with asterisks appear in the year according to the code shown on the base of each table. This between-year significance on the matched sample is a key part of the DID analysis. Additionally, only when the difference for the target between in the first and second years exceeds the difference between the first and second years for the controls is there potential of program-related impact, assuming other factors are accounted for.

[39] As was mentioned in chapter 3, two groups of Nespresso AAA's producers were analysed as an opportunity to track the impact of the strategic changes adopted by the AAA Programme and the impact on the internal upgrading strategies implemented by the same programme. The group labelled as AAA_1 adhered to the Programme in 2008, while the group labelled as AAA_2 adhered to the programme in 2009.

effect of the programme in two different groups of producers, do not generate significant differences over time both for the levels of subsidies or cash transfers as well as for the aid in kind received.

One important issue that emerges from the data shown in Table 6.2 is the fact that while the level of aid received through subsidies and/or cash transfers dropped sharply both for certified (Fairtrade in particular) and non-certified producers between 2009 and 2011, during the same period the level of aid in kind increased for the two group of producers, which implied that the control group are not just completely without any form of assistance.

In this sense, despite significant differences favouring certified producers in the annual analysis (although the difference in the change over time is not significant for Fairtrade producers), the control group of producers received an increased amount of aid in kind (line 3, 6 and 9 Table 6.2). As such, 60% of the coffee growers in the Fairtrade´s control group and 40% of the control group of Nespresso's received aid in kind through the support of different organisations, including NGOs (ACDI/VOCA), Colombia's government, producer organisations (FNC) and buyers among others. According to the coffee growers interviewed, aid in kind was given mainly in order to help them to meet the requirements imposed by the certifications and verifications programmes and to increase their current levels of productivity. This includes the donation of fertilisers as well as equipment used for the proper and safe application of agrochemicals, and the harvesting and post-harvesting process.

Table 6.2 Changes in access to credit, subsidies and/or cash transfers, and aid in kind

	Indicator	2008		2009		2011		Difference in difference	
		AAA_1	Ctrol	AAA_1	Ctrol	AAA_1	Ctrol	coef.	SE
1	% of producers who received credit	16.3%	14.5%	39.1%	15.1% ***	38.0%	44.4%	-0.040	0.065
2	% of producers who received subsidies and/or cash transfers			42.4%	34.5%	23.9%	21.4%	-0.156	0.083 *
3	% of producers who received aid in kind			23.9%	30.1%	54.9%	40.6% **	0.234	0.082 ***
		Fairtrade	Ctrol	Fairtrade	Ctrol	Fairtrade	Ctrol	coef.	SE
4	% of producers who received credit	63.8%	37.3% ***	64.6%	42.8% ***	75.6%	40.4% ***	0.088	0.078
5	% of producers who received subsidies and/or cash transfers			17.3%	28.4% **	0.8%	8.6% ***	0.091	0.060
6	% of producers who received aid in kind			34.6%	17.0% ***	72.4%	58.1% **	-0.013	0.075
				AAA_2	AAA_1	AAA_2	AAA_1	coef.	SE
7	% of producers who received credit			48.7%	45.7%	58.2%	44.7% *	0.090	0.083
8	% of producers who received subsidies and/or cash transfers			27.0%	40.9% *	13.8%	16.4%	0.023	0.077
9	% of producers who received aid in kind			32.3%	16.0% **	58.5%	58.4%	-0.136	0.086

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations.

*** p< 0,01; ** p< 0,05; * p<0,1

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

6.2.1.3 Access to training and technical assistance

The literature also highlights that producers, particularly small producers, often require support from external actors in order to circumvent their lack of appropriate managerial and technical skills. This type of producer, requires assistance such as free-of-cost services like technical extension services and training in different areas of coffee production and processing, in order to comply with the increasing number of functions and stricter requirements of voluntary sustainability standards.

This sub-section analyses the outcomes of three key variables: (i) access to training in GAP; (ii) access to quality improvement process and coffee tasting trials; and (iii) access to technical recommendation to fertilize.

Access to training in GAP

In this sense, the survey finds that participation in the Nespresso AAA_1 scheme positively influences access to more hours of training per year compared to conventional farmers. Although AAA_1 producers showed statistically significant lower levels of training during 2009, compared to conventional coffee growers, these differences were reverted during 2011. As such, over time, this study revealed a significant difference in difference between the two groups and AAA_1 farmers received more hours of training. In this sense, for example, the difference between the group from Nespresso farmers and the control group increased from 8% at 2009 to 88% at 2011 (line 1 Table 6.3).

Regarding the training of Fairtrade (FLO) producers and its respective control group, despite the fact that participating producers received significant higher number hours of training during the surveys of 2008, 2009 and 2011, these differences disappeared at endline and negative significant differences over time were reported (line 3 Table 6.3). In this sense, despite of positive differences between treated and control producers during the three surveys, the hours of training dropped 82% between the first and the third survey for treated producers and 81% for the control group. The causes of this situation are unknown are beyond the scope of this work. Nonetheless, a possible explanation to this situation, in the case of treated producers, is that training can be reduced once the certifications are obtained.

The main reason to explain why the hours of training increased for Nespresso producers, while these fell for Fairtrade and conventional producers, could rest in the fact that Nespresso has funded and leveraged resources for providing both training and extra technical assistance for those farmers affiliated to the programme. In this case, interviews during the two phases of fieldwork revealed that Nespresso has been financially supporting the training process in order to help farmers improve their

Table 6.3 Changes in access to training and technical assistance

	Indicator	2008		2009		2011		Difference in difference	
		AAA_1	Ctrol	AAA_1	Ctrol	AAA_1	Ctrol	coef.	SE
1	Average hours of training in GAP per year	28.4	26.3	10.3	25.9 ***	44.5	23.6 ***	34.5	10.4 ***
2	% of producers who were trained to improve the quality of coffee	63.0%	21.2% ***	2.2%	12.8% ***	48.9%	14.9% ***	-0.104	0.079
3	% of producers that participated from coffee tasting trials	26.1%	16.9% *	17.4%	18.3%	15.2%	12.9%	-0.067	0.062
4	% of producers who fertilize under technical recomendation	29.3%	21.2%	45.7%	35.1% *	45.7%	48.7%	-0.033	0.088
		Fairtrade	Ctrol	Fairtrade	Ctrol	Fairtrade	Ctrol	coef.	SE
5	Average hours of training in GAP per year	148.3	74.5 ***	63.7	44.2 *	26.9	14.0 ***	-52.3	23.1 **
6	% of producers who were trained to improve the quality of coffee	58.7%	8.1% ***	69.3%	20.4% ***	79.5%	28.6% ***	0.054	0.078
7	% of producers that participated from coffee tasting trials	85.8%	16.3% ***	71.7%	9.0% ***	56.7%	2.8% ***	-0.164	0.064 **
8	% of producers who fertilize under technical recomendation	43.3%	24.2% ***	66.1%	18.7% ***	84.3%	21.6% ***	0.417	0.073 ***
				AAA_2	AAA_1	AAA_2	AAA_1	coef.	SE
9	Average hours of training in GAP per year			42.7	9.9 ***	37.7	38.6	-23.1	7.0 ***
10	% of producers who were trained to improve the quality of coffee			49.2%	1.6% ***	77.8%	56.3% ***	-0.091	0.072
11	% of producers that participated from coffee tasting trials			36.0%	15.9% ***	24.9%	19.8%	-0.033	0.073
12	% of producers who fertilize under technical recomendation			58.7%	40.7% **	72.5%	52.7% **	0.066	0.092

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations.

*** p< 0,01; ** p< 0,05; * p<0,1

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

upgrading trajectories. Meanwhile these efforts have not operated, at least with the same intensity, for Fairtrade and conventional producers. As mentioned above, there is certain consensus among interviewers that changes in the coffee policy resulted in a drop in subsidies and training, and destined higher levels of resources to credit and aid in kind. However, this situation raises questions not only on the future and viability of conventional producers with a view to certification, but also about the sustainability of schemes that are promoting both the adoption of GAP and certifications programmes. If certain practices are not reinforced by subsequent training, then farmers did not retain their learning.

Meanwhile, the comparison between the two strands of Nespresso producers, revealed significant differences favouring AAA_2 producers in 2009, however at endline the difference in difference of hours of training negatively affected AAA producers. In this sense, for example, the difference between the group from AAA_2 farmers and AAA_1 group decreased from 332% at 2009 to -2% at 2011 (line 9 Table 6.3).

Concerning the distribution of training hours per topic, Table 6.4 below shows that there are no substantial differences between any of the certification groups and their control groups and the content of training is pretty much the same. Around one third and one fifth of training hours per year is dedicated to farm management practices and environmental topics respectively. Meanwhile, the average time during the surveys dedicated to train farmers in record keeping, traceability and financial management issues reached around nearly one sixth to the whole training time. Finally, training on certification topics covers between one seventh and one tenth on the total time dedicated to training.

Table 6.4 Training composition by topic, average from 2008, 2009, and 2011

	AAA_1	Ctrol	Fairtrade	Ctrol	AAA_2	AAA_1
Improvement of farm activities	30%	36%	40%	47%	24%	26%
Commercialization support	10%	8%	6%	8%	10%	13%
Certification	11%	9%	14%	9%	19%	16%
Health and welfare topics	12%	6%	9%	5%	10%	8%
Environment topics	16%	24%	17%	15%	19%	14%
Records kept, traceability systems and financial management	14%	12%	13%	14%	15%	19%
Literacy and others	6%	5%	1%	2%	4%	4%

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

Interestingly, the area of income diversification in other cash crops different from coffee is not even touch in the training. Based on the information provided by the interviewed farmers, all the training focuses exclusively on coffee, and the extension service do not

promote diversification of production to improve the financial feasibility of the certification schemes.

Access to quality improvement processes and coffee tasting trials

Participating in processes for the improvement of coffee quality is determinant to raise quality and a key factor to upgrade. Indications of whether a producer has been receiving assistance to ensure that their coffee beans reach the highest quality requirements are: i) whether they have participated in processes of quality improvement; and ii) whether producers have participated in trials of coffee tasting (coffee cupping) in order to know the organoleptic properties or defects in the coffee produced in their farms.

Regarding the first variable, and with only one exception of Nespresso AAA_1 in 2009, the evidence shows that a significantly higher share of the farmers affiliated to Fairtrade and Nespresso have participated in training activities to improve the quality of their coffee than their respective counterparts operating as a control (lines 2 and 6 Table 6.3). However, at endline, there were no significant difference in difference between certified and control producers, mainly as a result of a growing share of control producers participated in these activities. This is part of a broader institutional effort to support coffee producers improving the quality of their coffee, as part of a long term policy to protect the differentiation of Colombian coffee, as mentioned in Chapter 5, but in practice this policy tends to benefit larger certified producers as will be show later in section 6.3.

Regarding participation of farmers in coffee tasting trials, the study only found significant differences between Nespresso AAA_1 and conventional farmers operating as a control group regarding this variable for 2008. As such, over time the involvement in AAA_1 did not influence the participation in coffee tasting trials. The same holds for the comparison between the two strands of Nepsresso producers. Conversely, Fairtrade producers showed a higher participation in cupping trials during the three surveys and significant difference in difference between the two groups was detected (lines 3, 7 and 11 from Table 6.3).

It is worth mentioning, however, that the intensity of participation in the coffee tasting trails decreased between 2008 and 2011, both for treated and not treated producers, who witnessed similar rates of reduction. During the survey of 2008, the participation of certified farmers in coffee tasting trials in the sample of Fairtrade, Nespresso AAA_1 and Nespresso AAA_2 were 86%, 26% and 36% respectively. During the survey of 2011, this percentage dropped to 57%, 15% and 25% respectively. Meanwhile for non-certified producers operating as a control, only 3% and 13% or the control producers of Fairtrade and Nespresso respectively, participated in this practice in the same year.

Technical assistance on fertilisation

Technical extension services focused on adequate fertilisation, not only helps reduce production cost, but also to enhance product and volume upgrading. As will be mentioned in the next chapter, fertilisation makes up above one third of the production cost of coffee, which means that coffee producers often see this activity as a serious limitation to further upgrading.

In this sense, overtime the study found that the involvement in the Nespresso AAA_1 did not influence access to additional technical assistance to fertilise. As such, although the data showed significant higher levels of technical assistance to fertilize compared to conventional coffee growers during 2009, at endline these effects disappear and no significant difference in difference between the two groups was detected. Similarly, the comparison between the two strands of Nespresso producers did not reveal significant difference in difference. Although the analysis found significant differences favouring producers affiliated to AAA_2 compared to AAA_1 both for 2009 and 2011, no significant differences overtime is reported. Contrastingly, the study reported that a significantly higher share of Fairtrade producers fertilizes their trees after receiving technical recommendation compared with its respective control group. Therefore, significant difference in difference between the two groups was detected (lines 4, 8 and 12 from Table 6.3).

6.2.2 Investments and adoption of good agricultural practices (GAP) for improving upgrading trajectories

If coffee growers want to participate in certified value chains, they must adopt good agricultural practices both during the raise of the trees, the harvest and post-harvest process. Additionally, they must invest in post-harvest facilities. All of these, to guarantee a higher yield, consistent supply with the highest quality, taste and aroma profile required for the buyers. This should imply, after counting the extra-cost that new competitive requirements involve, significant increases in gross revenues, financial room for manoeuvre, and capacity to withstand adverse shocks and fulfil basic needs and improve the rural livelihoods (Hoebink, Ruben et al. 2014).

In this sense, this sub-section analyses the outcomes of two main criteria that are key for producers in their attempt to improve their upgrading strategies: (i) investments in post-harvest processing facilities to increase sales of parchment coffee[40]; (ii) adoption

[40] Traditionally, in Colombia the coffee growers have three options to sell their coffee: (i) as dry parchment directly in the cooperative or private buyers; (ii) at farm level once the berries are picked; and (iii) also in the farm in “wet state” once the mucilaginous pulp covering the bean has been removed. The last two, according with the information obtained during the interviews at fieldwork, implies not only that the producer do not possess the infrastructure needed to produce parchment coffee, but also that producers receive a lower price for their coffee and lost the quality premium.

of good agricultural practices – GAP, including investments in coffee tree renovation, particularly with rust-resistant varieties; investments in fertilisation and soil analysis to optimise fertilizer practices; and keeping record of activities to provide evidence that GAP were been implemented.

6.2.2.1 Changes in the post-harvesting infrastructure and sales of parchment coffee

An important question is whether farmers participating in certified chains were able to improve their post-harvesting processing facilities to comply with standards' requirements and increase the sales of parchment coffee.

In 2002 only 40% of coffee producers in Colombia had ready access to proper post-harvest processing facilities (Giovannucci, Leibovich et al. 2002). In fact, a further piece of research financed by USAID, pointed out that the lack of infrastructure in processing the coffee cherries was as a bottleneck for coffee growers to connect with high value markets (Castro, Ochoa et al. 2009). For washed Arabicas, two key post-harvest practices must be done once the coffee-cherries are harvested and carried out from the field: the milling and the drying process.[41] Furthermore, the main outcome of invest (or through financial aid) in improved post-harvesting infrastructure, should be both an increased amount of dry parchment coffee offered at the market and a significant decrease of *pasillas* (low quality coffee berries).

The data shown in the Table 6.5 revealed that over time participation in certified chains do not imply a significant higher access to post-harvesting facilities, neither higher proportion of parchment sales. In simple terms, the reason of these outcomes hold in the fact that the comparison of the difference for certified producers between the first and third survey fall behind the difference between the first and third survey for the controls (see foot page 38).

For example, the study revealed significant difference favouring Nespresso AAA_1 and Fairtrade during some years, however these differences disappear at endline and negative significant differences over time were reported (lines 2, 4, and 5 from Table 6.5). Similarly, for the two strands of Nespresso producers, the study did not detect significant differences-in-difference between the group for the availability at farm level

[41] After picking the coffee-cherry, on the same day it goes to the de-pulping machine which employ wet processing methods to remove the pulp or fruit cover from the seeds that are in the centre of each cherry. After that, the coffee beans, still encased in their tough parchment husk, are placed in fermentation tanks with clean water where the beans are allowed to soak in water for between 12 and 24 hours – this operation may also be carried out using special equipment. This process removes the mucilaginous pulp covering the bean which is of vital importance for the aroma of the coffee. When the washing is over and the fermented mucilage is removed, then the second practice took place as the beans must be dried using direct sunlight making use of various facilities or drying silos.

of post-harvesting infrastructure, both milling and drying infrastructure, (lines 7 and 8 Table 6.5).

The main reason to explain this situation refers to the notorious improvement in the milling and drying infrastructure witnessed mainly by those producers labelled as Nespresso AAA_1 and those operating as control group. For example, while only 24% and 25% of the sample of producers affiliated to Nespresso AAA_1 and the control group possessed a de-pulping unit during the survey of 2008, these shares raised to 59% and 70% respectively during the 2011 survey, an increase of 35 and 45 percentage points respectively (line 1 Table 6.5). Regarding Fairtrade and its control group, the increase were of 32 and 50 percentage points (line 4 Table 6.5). Interestingly, the producers affiliated to Nespresso AAA_1 and Fairtrade did show a small reduction in the availability of drying infrastructure, while their respective control groups increased substantially. As such, while the certified producers dropped 5 and 3 percentage points respectively between the surveys of 2008 and 2011, for the control producers the raise were of 24 and 22 percentage points respectively (lines 2 and 5 Table 6.5).

One likely reason to explain why this improvement occurred, could rest in the impact of the number of policy measures implemented by Colombian coffee authorities, with the support of national government and the private sector, that were put in place between 2008 and 2009 aimed at increasing output and regaining Colombia´s position as the second largest producing country (please see previous chapter for a description of these measures). Hence, it is likely that this increase has to deal with the fact that a big share of aid in kind was mainly concentrated on providing farmers with the infrastructure needed to process the coffee cherries.

In fact, during field work, several producers recognised that they have received these kinds of units provided by buyer companies (Nespresso-Nestle[42] and Starbucks), development agencies (USAID and its operators in Colombia as ACDI/VOCA), Colombia's government and regional and national producers' organisations (National Federation of Coffee Growers and Departmental Committees of Coffee Growers). However, up to now there is no official statistics or studies about the outcomes of these measures. In this respect, the support from coffee institutions that also covered non-certified producers could explain a lot of findings. The fact that non-certified producers were also benefiting from a range of institutional support programmes could mask the benefits of certification. As such, at least in Colombia, it not possible to claim that certifications have no, or very limited, positive effects; it can be argued, instead, that positive benefits from

[42] For example, Nestlé-Nespresso informed that between 2006 and 2012 in the departments of Nariño and Cauca the close collaboration with the National Federation of Coffee Growers implied delivering 14,000 wet milling and sun drying installations, 8.000 water management solutions, 12.000 water infrastructures, 20.000 actions for improving farm administration etc.).

Table 6.5 Changes in the post-harvesting infrastructure

	Indicator	2008		2009		2011		Difference in difference	
		AAA_1	Ctrol	AAA_1	Ctrol	AAA_1	Ctrol	coef.	SE
1	% of producers with milling (de-pulping) machine	23.9%	24.9%	22.8%	12.3% **	58.7%	70.3% *	-0.059	0.072
2	% of producers making use of efficient sun drying facilities	85.9%	62.5% ***	66.3%	74.5%	80.4%	86.6%	-0.232	0.065 ***
3	% of harvest sold as dry parchment	91.2%	88.3%	77.1%	82.8%	80.9%	78.4%	0.014	0.055
		Fairtrade	Ctrol	Fairtrade	Ctrol	Fairtrade	Ctrol	coef.	SE
4	% of producers with milling (de-pulping) machine	44.9%	31.9% **	51.2%	35.2% ***	77.2%	81.6%	-0.133	0.071 *
5	% of producers making use of efficient sun drying facilities	84.3%	27.5% ***	79.5%	30.9% ***	81.1%	49.2% ***	-0.181	0.062 ***
6	% of harvest sold as dry parchment	70.0%	37.7% ***	66.7%	33.6% ***	66.6%	45.5% ***	-0.083	0.061
				AAA_2	AAA_1	AAA_2	AAA_1	coef.	SE
7	% of producers with mill (de-pulping) machine			19.6%	20.9%	65.1%	54.0%	0.088	0.078
8	% of producers making use of efficient sun drying facilities			81.5%	59.3% ***	86.2%	63.5% ***	-0.053	0.065
9	% of harvest sold as dry parchment			84.5%	77.4%	86.6%	84.6%	-0.007	0.052

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations.

*** p< 0,01; ** p< 0,05; * p<0,1

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

certification was largely offset by positive benefits that were also available to non-certified farmers. It is possible that in a country where there were no parallel initiatives for non-certified farmers, would might be strong positive results for certification.

Changes in the way to sell coffee – proportion of the harvest sold as dry parchment

Whether coffee growers were able to increase the proportion of their harvest sold as dry parchment is a good indicator of improvement in the availability of post-harvesting facilities at farm level and that some process upgrading has taken place. In this sense as is shown in the Tables 6. 5 below, the comparison of the share of harvest sold as dry parchment between certified producers and those producers operating as a control group, did not detected significant difference-in-difference over time between the two groups. In the case of Fairtrade, for example, the data revealed that certified producers sold a statistically significant higher amount of their harvest in parchment during the three surveys. However, these effects disappeared at endline (line 6 Table 6.5). The main reason to explain this situation rest in the fall in the proportion of the harvest sold in parchment between 2008 and 2011 for Fairtrade produces - 3 percentage points, while for control producers this share increased 8 percentage points.

6.2.2.2 Changes in the adoption of good agricultural practices

Involvement in production of certified coffee might be expected to promote the adoption of agricultural techniques that improve productivity and quality.

This sub-section analyses the outcomes of five key variables tested during the surveys of 2008, 2009 and 2011: (i) proportion of coffee trees renovated yearly; (ii) percentage of farms with rust-resistant varieties; (iii) the proportion of coffee growers performing soil analysis; (iv) kilos of synthetic fertilizers applied by hectare annually; and (v) proportion of producers keeping records.

Changes in coffee tree renovation and adoption of resistant varieties to rust infection

Involvement in production of certified coffee might be expected to promote investment in techniques that improve productivity and quality. Investing in coffee tree renovation and the use of rust-resistant varieties would be one such investment.

In-depth investments in coffee tree renovation, in particular with rust-resistant varieties is key for achieving higher land productivity and coffee quality over time. The data shows that although investments in such varieties increased, this was true for both treatment and control groups (line 1, 6 and 11 Table 6.6). There were no significant differences overtime for either of the Nespresso groups, and the Fairtrade (FLO) comparison that only reached a 1% significance level in one of the three years. In the case of Fairtrade, for example, the quantitative data revealed that a statistically higher share of the control

producers adopted varieties of coffee resistant to rust infection during the three survey, although these differences disappear at endline.[43]

Changes both in the share of farmers performing soil analysis and the levels of synthetic fertilization

Rational fertilisation not only assure higher yields of improved quality and therefore a successful path for product and volume upgrading, but also lower production cost from cash inputs. However, rational fertilization to increase soil fertility are highly tied to technical recommendation to fertilize by the extension service, but particularly to perform a soil analysis for each farm in order to apply the right amount of organic and synthetic fertilizers.

The analysis of the quantitative data for these two variables revealed important differences between initiatives. For example, the involvement in Nespresso AAA_1 do not promote the use of soil analysis or higher levels of synthetic fertilizers applied to the soil (lines 3 and 4 Table 6.6). Data also revealed that these producers make almost null use of the soil analysis.

In the case of Fairtrade (FLO), despite the fact that the data revealed that Fairtrade producers performed a statistically significant higher amount of soil analysis during the three surveys, data revealed that a significant negative differences overtime were reported. Mainly explained by the substantial fall in the proportion of Fairtrade producer performing soil analysis between 2008 and 2011 - 24 percentage points against 9 percentage points of the control producers (line 8 Table 6.6). However, this outcome should be analysed carefully as soil analysis could be a one-off investment made at the beginning of the process as its information can be used for several years. Interestingly, quantitative data revealed that Fairtrade producers systematically applied significant higher levels of synthetic fertilizers over time compared to the control group (line 9 Table 6.6).

Interestingly, the comparison between the change over time for those producers labelled as Nespresso AAA_2 and Nespresso AAA_1, revealed statistically significant difference-in-difference between the two groups. As such, at endline, a higher share of those farmers labelled as AAA_2 not only performed soil analysis compared to AAA_1 farmers, but also applied higher amount of fertilizers. Quantitative data revealed that AAA_2 producers increase between 2009 and 2011 the share of produces performing soil analysis and the amount of fertilizers (lines 13 and 14 Table 6.6).

[43] As was mentioned earlier, only when the difference for the target between in the first and second years exceeds the difference between the first and second years for the controls is there potential of program-related impact, assuming other factors are accounted for.

Table 6.6 Changes in the adoption of good agricultural practices for Nespresso and Fairtrade (FLO)

	Indicator	2008		2009		2011		Difference in difference	
		AAA_1	Ctrol	AAA_1	Ctrol	AAA_1	Ctrol	coef.	SE
1	% of renovated trees	10.8%	14.8%	11.6%	10.4%	25.0%	25.4%	-0.015	0.048
2	% of farms with rust-resistant varieties	23.7%	20.4%	30.0%	24.8%	56.0%	54.9%	-0.032	0.054
3	% of farmers who perform soil analysis	3.3%	1.8%	4.3%	4.0%	6.5%	4.8%	0.008	0.038
4	Synthetic fertilizers applied (kg/ha)	880.2	568.4 **	966.0	896.2	969.9	969.0	-207.8	153.9
5	% of producers that keep records	4.3%	5.1%	9.8%	1.0% ***	23.9%	11.7% **	0.106	0.053 **
		FLO	Ctrol	FLO	Ctrol	FLO	Ctrol	coef.	SE
6	% of renovated trees	14.5%	10.9%	10.5%	11.2%	16.1%	16.2%	-0.056	0.036
7	% of farms with rust-resistant varieties	16.3%	22.3% *	15.4%	26.0% ***	37.8%	45.2% *	-0.046	0.041
8	% of farmers who perform soil analysis	51.2%	16.4% ** *	52.8%	21.7% ***	26.8%	7.3% ** *	-0.145	0.070 **
9	Synthetic fertilizers applied (kg/ha)	1,090	858 ***	1,035	859 **	1,761	951 ***	594.5	119.4 ***
10	% of producers that keep records	27.6%	3.5% ** *	37.8%	5.7% ***	34.6%	2.7% ** *	0.083	0.057
				AAA_2	AAA_1	AAA_2	AAA_1	coef.	SE
11	% of renovated trees			12.8%	7.9%	24.4%	23.8%	-0.043	0.046
12	% of farms with rust-resistant varieties			42.3%	41.7%	69.3%	64.4%	-0.053	0.049
13	% of farmers who perform soil analysis			27.5%	5.7% ***	44.4%	9.6% ** *	0.127	0.064 **
14	Synthetic fertilizers applied (kg/ha)			957.4	959.4	1,223.1	927.8 ***	214	106 **
15	% of producers that keep records			25.4%	6.3% ***	78.8%	20.3% ** *	0.397	0.070 ***

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations.

*** p< 0,01; ** p< 0,05; * p<0,1

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

Record keeping

Whether a growing proportion of coffee growers are able of keep detailed record of methods and materials used in coffee production for decision making activities indicate that they are aware of the benefits of this activity.

In this sense as is shown in the Tables 6.6 above the evidence shows that during the surveys capturing data from 2008, 2009 and 2011 a significantly higher share of the certified farmers keep records of their activities compare to their respective counterparts operating as a control. These differences were keep at endline as there were significant difference in difference between certified and control producers. The comparison between the two strands of Nespresso producers revealed a significant difference over time and during the surveys for those producers labelled as AAA_2 (lines 5, 10, and 15 Table 6.6).

In general, although there was an upward trend in the percentage of producers keeping records between the first and third survey, only one fourth and one third of AAA_1 and Fairtrade producers respectively keep records during the survey capturing data from 2011. Interestingly, nearly 80% of AAA_2 producers keep records.

However, despite of it importance as essential component to attain compliance, there were not training on record keeping (see Table 6.4). This information was confirmed during the field work as most of the farmers interviews had not received training courses in record-keeping.

6.3 Dynamics of value chain participation by farm size

The question whether the compliance of the stricter performance requirements of private process standards facilitate or hinder small farmers participation in agri-food value chains and end markets is still disputed in the literature (Von Hagen and Alvarez 2011). There are two main positions taken in the literature: some writers assert that the proliferation of standards has served to exclude smaller-scale participants from competitive markets and have pushed them to less profitable markets (Dolan and Humphrey 2004, Hatanaka, Bain et al. 2005, FAO 2006, Fulponi 2006), others argue that the compliance process could help small farmers to build competitive advantages that can result in a long term and profitable trade relationship with buyers (Auld 2010) with benefits in terms of enhanced livelihoods (Henson, Jaffee et al. 2009).

In summary, there is a lack of agreement among scholars about the role that standards can play either to catalyse or impede the trade relationships between buyers and small farmers. In fact, in the coffee sector up until now there is no evidence based on statistical analysis that has proved the assertion that voluntary sustainability standards (VSS) raise

barriers to small size coffee growers, or on the contrary, show that VSS do not endanger small farmer participation in the specialty coffee value chains.

It became necessary to inquire, from a comparison between large and small coffee growers, if small coffee growers can participate from the specialty coffee value chain of certified coffees and effectively survive, gain competitive advantages over their large competitors, preserve their position as farmers and improve their incomes through improved farm productivity and quality enhancement. Or on the contrary, determine if small coffee growers are at risk as these initiatives are not open to everyone due to the hidden cost of coordination (Jaffee and Henson 2005), higher transaction cost associated with their participation (Kaplinsky and Fitter 2004) and hence does not automatically guarantee economic benefit (Neilson 2007) unless unsuccessful small farmers find the institutional and organisational donor support to overcome the most important constraints imposed by the standards (Humphrey and Schmitz 2001, Giovannucci and Purcell 2008, Humphrey 2008, Henson, Jaffee et al. 2009).

Therefore, a farm size comparison was carried for the same set of variables or indicators analysed in the sub-sections 6.2.1 and 6.2.1 which are part of the two main development areas or principles that are determinant for producers to build their competences, upgrade and participate into the specialty coffee value chain. Base on previous work of the author about the agrarian structure of the coffee sector in Colombia (García and Ramírez 2002, García 2003) larger farmers are those owned farms above five hectares while small farmers are those with farms below one hectare. As such, the statistical comparison was carried out between certified large farmers and small farmers from the same scheme and small control producers.[44] Table 6.7 shows the mean for each variable and each type of producers, followed by the mathematical difference among larger and smaller producers and the statistical significance.

Access to credit, subsidies and/or cash transfers, and aid in kind

What emerges from this analysis is that small scale farmers, both treated as not-treated, are at a disadvantage compared to certified large scale farmers, even though credit opportunities for non-certified producers increased during the three surveys (lines 1, 2 and 3 Table 6.7).

Quantitative evidence shows that, with one exception, certified larger farmers have greater access to credit access compared to smaller farmers - both treated and control

[44] For the analysis of Nespresso AAA_1 farms above 5 hectares were excluded due to the small number of farms and lack of representativeness. Therefore, for Nespresso AAA_1 producers, the comparison is between medium size certified farms above one hectare and below 5 hectares and small farms below one hectare - both certified and the control group. For Fairtrade (FLO) producers and Nespresso AAA_2, the comparison is between larger certified farmers above five hectares and small farms below one hectare - both certified and the control group.

groups. For example, during the three surveys, medium size producers affiliated to Nespresso AAA_1 had statistically greater access to credit service compared to smaller farmers - both certified and control producers. Similarly, the same trend holds for the Fairtrade (FLO) comparison. Finally, the comparison between the two strands of Nespresso producers revealed that involvement in AAA_2 positively influences the access to credit for larger producers compared to both AAA_2 and AAA_1 small producers. Both in 2009 and 2011 a statistically significant proportion of larger AAA_2 producers received credit compared to smaller farmers labelled as AAA_1. The same trend holds for the comparison against smaller farmers of AAA_2 during 2009, although disappeared during 2011.

What emerge from these results, in the particular case of small certified farmers, is that lower levels of credit compared to larger certified farmers could make it difficult for them to achieve the standard's competitive requirements and comply with a number of investments required by VSS. In terms of the non-certified producers, at some point, this situation could be seen as a source of exclusion and marginalization with a view to certification.

Meanwhile, taking into consideration the differences in the average amount of subsidies and/or cash transfers, and the aid in kind,[45] the overall picture that emerges is that while support through subsidies or cash transfers favoured small farmers - both certified and the control group, aid in kind benefited larger certified farmers.[46] For example, for the first variable in 2009 and 2011 there were no statistical differences between medium size Nespresso AAA_1 producers and small producers, both certified and the control group (line 4 Table 6.7). Contrastingly during 2011 were medium size Nespresso AAA_1 farmers who received a statistically higher amount of aid in kind compared with small-certified farmers and those operating as a control, 23 and 36 percentage points respectively (line 7 Table 6.7).

Similarly, in 2011 larger Fairtrade (FLO) producers received a statistical significant lower level of subsidies and/or cash transfers compared to small control producers – 19 percentage points. Contrastingly, were larger Fairtrade farmers who received statistically more aid in kind compared with small certified and farmers operating as a control group during 2011, 36 and 49 percentage points respectively (line 5 and 8 Table 6.7).

[45] Questions about these issues were included just after the survey of 2009 following a request by the author of this thesis.

[46] A negative mathematical difference indicates that smaller farmers received more aid than larger producers, and a positive difference indicates the contrary.

Finally, the comparison between the two strands of Nespresso farmers, revealed the same trend mentioned above. While support through subsidies or cash transfers favoured statistically small farmers, both AAA_2 and AAA_1 - 15 and 27 percentage points respectively, aid in kind benefited statistically larger AAA farmers compared to smaller AAA_2 and AAA_1 farmers below one hectare - 32 and 44 percentage points respectively (lines 6, and 9 Table 6.7).

Access to training and technical assistance

Further analysis explored whether the smaller producers below one hectare, both treated and non-treated, received similar amounts of hours per year of training in GAP, compared to those who are certified and own larger farms, with ambiguous results.

In this sense, for AAA_1 farmers, the evidence signals that certified small producers received a statistical significant higher number of hours of training in GAP per year during the surveys of 2008 and 2011. Similarly, small control producers received a significantly higher amount of hours of training during the survey of 2009 (line 10 Table 6.7). Meanwhile, in the case of Fairtrade producers, during the three surveys, there is no evidence to conclude that larger farmers benefit with higher levels of training. Finally, the comparison between the two strands of Nespresso producers revealed that in 2009, AAA_2 larger producers received a statistically significant higher amount of hours of training in GAP per year compared to both groups of smaller producers below one hectare (AAA_2 and AAA_1). Contrastingly, during 2011, AAA_1 producers below 1 hectare were those who received a significant higher amount of training compared to bigger producers (line 12 Table 6.7).

Access to quality improvement processes and coffee tasting trials

Taking into consideration the differences in the average participation rates in coffee cupping trials and processes of quality improvement. Overall, the evidence shows that a statistically significant higher share of larger farmers participated in these two activities compared to the share of smaller farmers.

For example, for the producers' participation in processes to improve the quality of coffee, medium Nespresso AAA_1 producers overcame smaller conventional producers during the surveys of 2008 and 2011 by 33 and 29 percentage points respectively. A similar trend was kept for tasting trials, although with lower differences, 15 and 16 percentage points respectively during the same two surveys (lines 13 and 16 Table 6.7). Statistical differences between the two strands of Nespresso producers of different size were also found. For example, a higher share of the large farmers of Nespresso AAA_2 participated in processes to improve the quality of the coffee compared to smaller producers of Nespresso AAA_1 – 55 and 28 percentage points during the surveys of 2009

and 2011 respectively. For coffee tasting trials, statistical differences held only during the survey of 2009 – 21 percentage points (lines 15, and 18 Table 6.7).

Meanwhile, for Fairtrade (FLO) producers, the differences in the average participation rates between larger and smaller producers favoured the larger ones. For example, coffee tasting trials and farmers' participation in processes to improve coffee quality, differences reached 53 and 71 percentage points respectively in 2011 (lines 14, and 17 Table 6.7).

Technical assistance on fertilisation

A statistically higher proportion of larger farmers received technical assistance to fertilize their trees compared to the proportion of smaller farmers. The exception to this assertion is the comparison between medium size farmers affiliated to Nespresso AAA_1 and small farmers, both certified and the control group, as there were no statistical differences during 2008 and 2011. Only during 2009 larger treated producers overcome statistically the control group.

Contrastingly, a statistically significant share of large Fairtrade (FLO) producers received technical recommendations to fertilize compared to those small producers of the control group. Notwithstanding, there were no statistical differences between larger and small producers affiliated to Fairtrade. The same trend holds for the comparison between the two strands of Nespresso producers. A significant higher share of larger producers of AAA_2 received technical assistance – 25 and 28 percentage points during the surveys of 2009 and 2011 respectively.

Changes in the post-harvesting infrastructure

One step forward consisted of inquiring about the differences between larger and smaller producers, both treated and non-treated, in the availability of post-harvesting infrastructure at farm level. As in other variables, the evidence shows that, with few exceptions, large and medium certified farms are statistically better equipped with milling and sun drying infrastructure to meet the quality demands of the specialty market than small farmers.

For example, medium size farmers affiliated to Nespresso AAA_1 possessed a statistically significant higher amount of milling machines than small producers – both treated and control groups (only with the exception of small Nespresso farmers in 2009). However, the same situation does not hold for sun drying facilities, as there were not statistical differences between farms of different sizes during the survey of 2009 and 2011 (lines 22, and 25 Table 6.7).

Meanwhile, during 2008, 2009 and 2011 a statistically higher proportion of larger Fairtrade producers possessed milling infrastructure at farm compared to small farmers - both treated and control groups. The same situation holds for sun drying infrastructure (lines 23, and 26 Table 6.7). The same trend holds for the comparison between the two strands of Nespresso producers. A significant higher share of larger producers of AAA_2 possessed milling and sun drying infrastructure compared to smaller producers (lines 24, and 27 Table 6.7).

As such, efforts must continue among different donors in order to assist and support small farmers in achieving material quality improvements. They can do so by either improving their processing infrastructure or, when necessary, additional alternatives to mill their coffee such as coffee processing centres.

Changes in the way to sell coffee – proportion of the harvest sold as dry parchment

One step forward consisted in compare whether the smaller producers, both treated and non-treated, sold a similar proportion of dry parchment coffee than larger certified farmers. In this sense, for AAA_1 farmers the evidence signals that there are not statistical significant differences between medium size certified and small farmer – both treated and non-treated, for most of the comparisons during the surveys of 2008, 2009, and 2011. One exception to this trend appear in 2008 as medium size certified farmers sold a statistically higher proportion of their harvest as dry parchment compared to smaller producers of the control group. However, these differences disappeared in 2009 and 2011 (line 28 Table 6.7).

Meanwhile, during 2008, 2009 and 2011 larger Fairtrade producers sold a statistically higher proportion of their harvest as dry parchment compared to small farmers - both treated and control groups. One exception to this trend appear in 2008 as there were not statistical differences between larger and smaller Fairtrade (FLO) producers. However, this do not hold during 2009 and 2011 (line 28 Table 6.7).

Finally, the comparison between the two strands of Nespresso producers´ revealed that AAA_2 larger producers sold a statistically significant higher share of their harvest as dry parchment compared to two groups of smaller producers in 2009. However, this difference disappears in 2011.

Changes in coffee tree renovation and adoption of resistant varieties to rust infection

One step forward consisted in compare whether the smaller producers below one hectare, both treated and non-treated, performed the renovation of their coffee trees and adopted resistant varieties in the same proportion than larger certified farmers. In this sense, for AAA_1 farmers the evidence signals that there are not statistical significant differences between medium size certified farmers and small farmer for most

of the comparisons. One exception to this trend appear in 2009, as a statistically higher proportion of medium size certified farmers renovated their coffee trees compared to smaller producers – both treated and non-treated. However, these differences disappeared in 2011 (line 31, and 34 Table 6.7).

Meanwhile, for the case of Fairtrade producers, the effects found in the quantitative data are contradictory. Regarding the proportion of farmers that renovated their coffee trees, the comparison revealed that larger producers statistically overcome smaller farmer during 2008 and 2011, while the contrary hold during 2009 (line 32 Table 6.7). Regarding the adoption of resistant varieties, smaller control producers overcome statistically larger Fairtrade producers in 2011, but no statistical difference were found in the same year between larger and smaller Fairtrade farmers (line 35 Table 6.7).

Finally, the comparison between the two strands of Nespresso producers´ revealed that in 2009 AAA_2 larger producers renovated a statistically significant share of their trees compared to smaller AAA_1 producers. However, this difference disappears in 2011. Regarding the proportion of trees resistant to rust infections, no statistical differences are reported.

As was explained above, one possible reason to explain this situation relies on the number of policy measures implemented by coffee authorities and the national government put in place between 2008 and 2009 aimed at increasing output to previous average production levels of 11 and 12 million 60 kg bags. However, up to now there is no official statistics or studies about the outcomes of these measures.

Changes both in the share of farmers performing soil analysis and the levels of synthetic fertilisation

In most of the comparisons a statistical higher proportion of larger farmers perform soil analysis compared to the proportion of smaller farmers – both treated and non-treated. For example, in 2011 a statistically higher proportion of medium size farmers affiliated to Nespresso AAA_1 performed soil analysis compared to smaller producers– both certified and non-certified. For Fairtrade producers there were statistical differences during the three surveys favouring larger farmers, with the exception of the comparison carried out in 2011 between larger and small Fairtrade producers. Interestingly, the comparison between the two strands of Nespresso producers´ revealed also significant differences favouring larger farmers (lines 37, 38, and 39 Table 6.7).

Finally, regarding the comparison in the amount of fertilizers applied between larger and smaller producers, there were not differences for the comparison of medium size Nespresso AAA_1 producers and smaller producers (both certified and control producers). For Fairtrade, larger producer differed statistically from smaller Fairtrade

producers in 2008, and from smaller control producers in 2011. Finally, the quantitative data for large AAA_2 producers do not revealed statistical differences against smaller AAA_2 producers. Meanwhile the comparison against smaller AAA_1 to larger AAA_2 producers revealed contradictory effects, as during 2009, the statistical differences favouring smaller producers of AAA_1, while during 2011 the differences favouring larger farmers of AAA_2.

Record keeping

In general, what emerges from this analysis is that a lower proportion of small scale farmers, both treated as not-treated, keep records compared to certified large scale farmers (lines 43, 44 and 45 Table 6.7). In general, although there was an upward trend in the percentage of producers keeping records, a lower proportion of producers keep detailed record of methods and materials used in coffee production (with the exception of AAA_2 producers).

For example, a statistically significant higher share of medium size farmers affiliated to Nespresso AAA_1 and large Fairtrade (FLO) farmers keep records compared to small producers – both treated and control groups. The comparison between the two strands of Nespresso producers´ revealed that a higher proportion of AAA_2 larger producers keep records compared to smaller AAA_1 producers (line 45 Table 6.7).

Table 6.7 Comparison by farm size for changes in assistance and investments to upgrade for Nespresso and Fairtrade (FLO)

Indicator		Comparison by farm size*	2008 Mean	2008 S.E	2008 Diff	2009 Mean	2009 S.E	2009 Diff	2011 Mean	2011 S.E	2011 Diff
% of producers that have credit		AAA_1 medium	25%	6%		45%	7%		51%	8%	
	1	AAA_1 small	6%	4%	19% ***	28%	7%	16% *	25%	7%	26% ***
		Ctrol small	4%	2%	21% ***	10%	3%	35% ***	27%	4%	24% ***
		FLO larger	71%	7%		83%	6%		77%	7%	
	2	FLO small	38%	14%	33% **	40%	16%	43% ***	40%	16%	37% **
		Ctrol small	20%	9%	51% ***	27%	12%	56% ***	19%	10%	58% ***
		AAA_2 larger				79%	10%		53%	12%	
	3	AAA_2 small				34%	7%	45% ***	55%	8%	-2%
		AAA_1 small				31%	7%	48% ***	27%	7%	26% **
% of producers who received subsidies and cash transfers§		AAA_1 medium				43%	7%		26%	7%	
	4	AAA_1 small				46%	8%	-4%	25%	7%	1%
		Ctrol small				43%	5%	0%	26%	4%	-1%
		FLO larger				23%	7%		0%	0%	
	5	FLO small				10%	10%	13%	0%	0%	0%
		Ctrol small				20%	11%	3%	19%	10%	-19% ***
		AAA_2 larger				21%	10%		0%	0%	
	6	AAA_2 small				32%	7%	-11%	15%	6%	-15% **
		AAA_1 small				46%	8%	-25% **	27%	7%	-27% ***
% of producers who received aid in kind§		AAA_1 medium				32%	7%		67%	7%	
	7	AAA_1 small				18%	6%	14% *	43%	8%	23% **
		Ctrol small				31%	4%	1%	31%	4%	36% ***
		FLO larger				31%	8%		86%	5%	
	8	FLO small				10%	10%	21% *	50%	17%	36% ***
		Ctrol small				27%	12%	5%	38%	13%	49% ***
		AAA_2 larger				26%	10%		88%	8%	
	9	AAA_2 small				38%	7%	-12%	56%	8%	32% **
		AAA_1 small				15%	6%	11%	44%	7%	44% ***
Average hours of training in GAP per year		AAA_1 medium	19.9	4.6		11.6	2.8		35.4	6.5	
	10	AAA_1 small	41.4	16.6	-21.5 *	8.9	0.8	2.7	53.8	8.1	-18.3 **
		Ctrol small	26.1	6.6	-6.2	23.1	3.9	-11.5 **	30.3	8.7	5.2
		FLO larger	183.1	32.6		73.9	20.8		37.7	10.9	
	11	FLO small	172.0	52.3	11.1	64.6	15.0	9.4	17.0	3.9	20.7
		Ctrol small	79.0	66.3	104.1	47.4	22.8	26.5	18.4	5.2	19.3
		AAA_2 larger				58.9	22.9		33.2	8.6	
	12	AAA_2 small				24.4	4.3	34.6 **	53.1	9.1	-19.9 *
		AAA_1 small				8.8	0.8	50.1 ***	46.9	6.0	-13.7
% of producers who were trained to improve the quality of coffee		AAA_1 medium	54%	7%		2%	2%		47%	8%	
	13	AAA_1 small	77%	7%	-23% **	3%	3%	0%	57%	8%	-10%
		Ctrol small	20%	4%	33% ***	8%	2%	-5% *	18%	4%	29% ***
		FLO larger	55%	8%		77%	7%		84%	6%	
	14	FLO small	62%	14%	-6%	50%	17%	27% **	70%	15%	14%
		Ctrol small	0%	0%	55% ***	20%	11%	57% ***	13%	9%	71% ***
		AAA_2 larger				58%	12%		88%	8%	
	15	AAA_2 small				36%	7%	22% **	75%	7%	13%
		AAA_1 small				3%	3%	55% ***	60%	7%	28% **
% of producers that participated from coffee tasting trials		AAA_1 medium	27%	6%		21%	6%		23%	7%	
	16	AAA_1 small	26%	7%	1%	13%	5%	8%	7%	4%	16% **
		Ctrol small	12%	4%	15% **	14%	3%	7%	8%	2%	16% ***
		FLO larger	97%	3%		80%	7%		53%	8%	
	17	FLO small	62%	14%	36% ***	40%	16%	40% ***	50%	17%	3%
		Ctrol small	5%	5%	92% ***	0%	0%	80% ***	0%	0%	53% ***
		AAA_2 larger				32%	11%		18%	10%	
	18	AAA_2 small				24%	6%	8%	25%	7%	-7%
		AAA_1 small				10%	5%	21% **	9%	4%	9%

§ These two variables were included only in the surveys to obtain data from 2009 and 2011.

Continued…

Table 6.7 Comparison by farm size for changes in assistance and investments to upgrade

Indicator		Comparison by farm size*	2008 Mean	2008 S.E	2008 Diff	2009 Mean	2009 S.E	2009 Diff	2011 Mean	2011 S.E	2011 Diff
% of producers who fertilize under technical recomendation		AAA_1 medium	29%	6%		45%	7%		51%	8%	
	19	AAA_1 small	31%	8%	-3%	51%	8%	-7%	43%	8%	8%
		Ctrol small	29%	5%	-1%	30%	4%	15% **	43%	5%	8%
		FLO larger	50%	8%		74%	7%		88%	5%	
	20	FLO small	54%	14%	-4%	80%	13%	-6%	90%	10%	-2%
		Ctrol small	20%	9%	30% **	13%	9%	61% ***	13%	9%	76% ***
		AAA_2 larger				79%	10%		71%	11%	
	21	AAA_2 small				62%	7%	17% *	70%	7%	1%
		AAA_1 small				54%	8%	25% **	42%	7%	28% **
% of producers with mill (de-pulping) machine		AAA_1 medium	35%	7%		23%	6%		72%	7%	
	22	AAA_1 small	11%	5%	23% ***	15%	6%	8%	43%	8%	29% ***
		Ctrol small	19%	4%	16% **	14%	3%	9% *	59%	5%	13% *
		FLO larger	55%	8%		60%	8%		84%	6%	
	23	FLO small	15%	10%	40% ***	20%	13%	40% **	50%	17%	34% **
		Ctrol small	15%	8%	40% ***	20%	11%	40% ***	50%	13%	34% ***
		AAA_2 larger				21%	10%		82%	10%	
	24	AAA_2 small				2%	2%	19% ***	53%	8%	30% **
		AAA_1 small				15%	6%	6%	42%	7%	40% ***
% of producers employing cover floor or parabolic dry to sun-dry coffee		AAA_1 medium	88%	4%		70%	7%		84%	6%	
	25	AAA_1 small	86%	6%	3%	59%	8%	11%	75%	7%	9%
		Ctrol small	64%	5%	25% ***	68%	4%	3%	78%	4%	6%
		FLO larger	92%	4%		86%	6%		84%	6%	
	26	FLO small	77%	12%	15% *	60%	16%	26% **	70%	15%	14%
		Ctrol small	15%	8%	77% ***	13%	9%	72% ***	44%	13%	40% ***
		AAA_2 larger				89%	7%		94%	6%	
	27	AAA_2 small				68%	7%	21% **	90%	5%	4%
		AAA_1 small				59%	8%	30% ***	71%	7%	23% **
% of harvest sold as parchment		AAA_1 medium	92%	4%		80%	5%		81%	5%	
	28	AAA_1 small	91%	5%	1%	71%	7%	9%	84%	5%	-3%
		Ctrol small	83%	4%	9% *	77%	3%	3%	73%	4%	8%
		FLO larger	66%	5%		61%	6%		67%	5%	
	29	FLO small	63%	10%	3%	44%	15%	17% *	47%	16%	20% *
		Ctrol small	29%	10%	37% ***	17%	8%	44% ***	37%	12%	30% ***
		AAA_2 larger				89%	3%		88%	6%	
	30	AAA_2 small				75%	5%	13% *	80%	5%	8%
		AAA_1 small				71%	7%	18% **	84%	5%	4%
% of renovated trees		AAA_1 medium	11%	3%		16%	4%		20%	5%	
	31	AAA_1 small	10%	4%	1%	7%	3%	9% **	30%	6%	-10%
		Ctrol small	16%	3%	-5%	10%	2%	6% *	26%	3%	-6%
		FLO larger	12%	3%		6%	2%		17%	3%	
	32	FLO small	2%	2%	9% **	20%	13%	-14% **	0%	0%	17% ***
		Ctrol small	11%	7%	1%	7%	7%	-1%	23%	10%	-6%
		AAA_2 larger				16%	4%		29%	6%	
	33	AAA_2 small				12%	4%	5%	22%	5%	7%
		AAA_1 small				7%	3%	9% *	31%	6%	-1%
% of farms with rust resistant varieties		AAA_1 medium	24%	5%		29%	5%		53%	6%	
	34	AA to AAA sma	26%	7%	-2%	33%	6%	-4%	59%	6%	-5%
		Ctrol small	23%	4%	1%	23%	3%	6%	54%	4%	0%
		FLO larger	13%	4%		18%	5%		36%	4%	
	35	FLO small	15%	10%	-2%	4%	4%	15% *	24%	13%	12%
		Ctrol small	14%	7%	-1%	10%	5%	9%	59%	11%	-23% ***
		AAA_2 larger				40%	7%		72%	6%	
	36	AAA_2 small				38%	6%	2%	66%	6%	6%
		AAA_1 small				35%	7%	5%	62%	6%	10%

Continued…

Table 6.7 Comparison by farm size for changes in assistance and investments to upgrade

Indicator		Comparison by farm size*	2008 Mean	2008 S.E	2008 Diff	2009 Mean	2009 S.E	2009 Diff	2011 Mean	2011 S.E	2011 Diff
% of producers who perform soil analysis		AAA_1 medium	2%	2%		2%	2%		9%	4%	
	37	AAA_1 small	3%	3%	-1%	3%	3%	-1%	2%	2%	7% *
		Ctrol small	1%	1%	1%	1%	1%	1%	3%	1%	7% **
		FLO larger	68%	8%		68%	8%		23%	7%	
	38	FLO small	38%	14%	30% **	38%	14%	30% **	20%	13%	3%
		Ctrol small	10%	7%	58% ***	10%	7%	58% ***	6%	6%	17% *
		AAA_2 larger				16%	9%		41%	12%	
	39	AAA_2 small				32%	7%	-16% *	38%	8%	4%
		AAA_1 small				5%	4%	11% *	2%	2%	39% ***
Synthetic fertilizers applied (kg/ha)		AAA_1 medium	997	235		934	97		913	110	
	40	AAA_1 small	733	111	264	984	80	-50	1,069	88	-156
		Ctrol small	791	59	205	915	46	19	1,042	76	-128
		FLO larger	1,056	99		1,026	117		1,608	123	
	41	FLO small	1,636	202	-580 ***	909	172	117	1,866	353	-258
		Ctrol small	853	145	203	1,072	205	-46	854	203	754 ***
		AAA_2 larger				762	85		1,384	188	
	42	AAA_2 small				890	72	-129	1,176	103	208
		AAA_1 small				1,005	84	-244 **	1,079	86	305 **
% of producers that keep records		AAA_1 medium	6%	3%		15%	5%		23%	7%	
	43	AAA_1 small	3%	3%	3%	5%	4%	10% *	27%	7%	-4%
		Ctrol small	2%	2%	3%	1%	1%	14% ***	10%	3%	13% **
		FLO larger	37%	8%		37%	8%		37%	7%	
	44	FLO small	15%	10%	21% *	40%	16%	-3%	0%	0%	37% **
		Ctrol small	0%	0%	37% ***	7%	7%	30% **	0%	0%	37% ***
		AAA_2 larger				21%	10%		76%	11%	
	45	AAA_2 small				22%	6%	-1%	77%	7%	-1%
		AAA_1 small				8%	4%	13% *	24%	6%	52% ***

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations. *** p< 0,01; ** p< 0,05; * p<0,1

* Larger farms are those above 5 ha; medim size farms are those above one hectare and below 5 ha; and small farms are those below 1 ha.

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

6.4 Discussion and conclusions

This chapter provides new empirical evidence to understand how VSS impact on the upgrading opportunities of coffee growers. Up until now there has been limited empirical evidence about the question of whether implementing VSS can be viewed as a tool to enhance upgrading trajectories or as a barrier to entry in the specialty coffee value chain. Innovate in the different spheres of economic upgrading in the specialty coffee value chain governed by VSS demands overcoming serious constraints that limit farmers' ability to participate competitively (Bamber and Fernández-Stark 2014), but particularly requires institutions and inputs from the private sector to help producers to develop competences for further upgrading (Humphrey 2008, Riisgaard, Bolwig et al. 2010).

In the last decade much of the literature exploring current debates on private standards has focused on the standard setting, implementation and certification (Ponte 2008) as well as the direct and indirect benefits of adopting VSS (Ponte 2002, Lewin, Giovannucci

et al. 2004, Ponte 2004, Daviron and Ponte 2005, Giovannucci and Ponte 2005, Giovannucci, Liu et al. 2008a, Blackman and Rivera 2010, Pierrot, Giovannucci et al. 2011, Brando 2012, Giovannucci, Scherr et al. 2012). However, there is a scarcity of information and thus little agreement on the question of how the adoption of the requirements of VSS has affected the upgrading strategies of the coffee growers that are participating in the specialty coffee value chain, and the role that local institutional support can play to mobilize public and private resources and help producers overcome serious limitations in their ability to develop competences for further upgrading and participate competitively.

Interestingly, the role that public and private sector support can play in facilitating upgrading strategies in coffee growers who are participating in the specialty coffee value chain has received little attention in the literature on the 'developmental' impact of standards, labels and certifications. Additionally, few systematic studies have addressed whether VSS have affected the investments and adoption of GAPs needed to improve upgrading trajectories at farm level, particularly in small farmers.

This chapter proposed a model to ascertain whether the dynamics of value chain participation of coffee producers adhered to VSS initiatives, compared with their respective control group of producers, resulted in significant differences in differences for a set of 15 matched indicators of two main development areas or principles that are determinants for producers to build their competences on, and to innovate in different spheres of economic upgrading: (i) institutional arrangements to facilitate farmers´ upgrading efforts; and (ii) investments and adoption of good agricultural practices (GAP) needed for improving upgrading trajectories.

The study compares Fairtrade and Nespresso AAA (AAA_1 hereafter) farmers with two groups of similar non-certified farmers during three rounds of surveys over a four-year time interval, and compares two groups of Nespresso AAA producers (AAA_2 vs AAA_1 hereafter), which are at two different stages of certification, during two rounds of surveys over a two-year interval.[47] The study used a difference analysis with propensity score matching techniques that allowed to construct rigorous counterfactual and correct for selection bias and the influence of independent factors.

The overall picture that emerges from this research is one where the impact of the public and private sector interventions to facilitate upgrading, and the investments and adoption of GAP to support the involvement of coffee growers in VSS, are not

[47] As was mentioned in chapter 3, two groups of Nespresso AAA's producers were analysed as an opportunity to track the impact of the strategic changes adopted by the AAA Programme and the impact on the internal upgrading strategies implemented by the same programme. The group labelled as AAA_1 adhered to the Programme in 2008, while the group labelled as AAA_2 adhered to the programme in 2009.

permanent or consistent over time for most of the indicators analysed. Therefore, the potential of interventions to mobilize financial and human resources for upgrading or to accelerate investments and the adoption of GAP needed to improve farmers upgrading trajectories, has not yet been materialized at all.

In essence, for long cycle crops such as coffee, it is clear that the potential to generate significant changes and differences in certified producers as opposed to conventional producers, can take, not only more time, but also calls for greater collaboration and coordination efforts among institutional structures, local organizations and private buyers to leverage resources and assist producers to close gaps quickly and achieve product, process and volume (yield) upgrading and meet the competitive requirements of VSS particularly smaller producers who face the greatest disadvantages.

In most of the comparisons, certified farmers witnessed significant statistical differences during at least one of the three annual surveys, but at the endline these differences had decreased or even disappeared. As a result, significant differences in differences overtime were observed only for a few variables. Is important to remember that for most of the comparisons, the differences for the certified producers during the first and third year did not always exceed the differences for the control group during the first and third year, which is a necessary condition to infer impact of the intervention related to the treatment (Khandker, Koolwal et al. 2010, Bennet, Giovannucci et al. 2013).

From this evidence an important question arises: is there a coherent strategy among downstream actors behind the provision of public goods and support services to facilitate upgrading and allow producers to participate competitively in the specialty coffee value chain both certified and conventional? In this sense, the quantitative and qualitative information collected during two periods of field work did not reveal the existence of clear strategies between VSS initiatives and institutions when it comes to intervention in different territories or typologies of farmers. The fact that there were no clear differences in the composition of training, access to credit to facilitate upgrading, technical assistance for key production activities related to coffee quality or changes in the post-harvesting infrastructure between any of the certification groups and their control groups, indicates that the emphasis among institutions and initiatives to provide assistance does not vary significantly. In this regard, interviews also revealed that the support services provided by chain stakeholders such as exporters, government and aid agencies, among others, are not coordinated or consistent over time, which implies duplication of efforts and an inefficient use of time and resources needed to improve farmers upgrading trajectories.

In relation to the first area of development proposed, the institutional arrangements to innovate in different spheres of economic upgrading, the quantitative data revealed that

the participation in the Nespresso AAA_1 certification affected significantly and positively in only two of the seven indicators proposed to test the institutional support provided to coffee-growers. Positive significant differences in differences were observed for the levels of aid in kind and the hours of training received. Contrastingly, key indicators such as access to credit facilities and technical assistance to fertilize or improve the quality of the coffee did not show statistically significant differences overtime from their respective control group. In addition, the comparison of the two strands of Nespresso, did not reveal positive differences in differences for most of the indicators.

These results challenge the impressions collected in the focus groups conducted during fieldwork, since the group of producers affiliated to the Nespresso AAA programme perceived notable benefits from the programme's interventions. Likewise, fieldwork interviews with producers and local extension specialists, revealed a general perception of Nespresso's skills in establishing public private partnerships (PPP), leveraging resources with NGOs, multilateral and donors, and investment of important financial resources in order to improve producers' capabilities, infrastructure for coffee production and tree renovation.

Meanwhile, for Fairtrade significant and positive differences in difference estimates were observed only in relation to access to technical assistance on fertilisation from seven key indicators analysed. In this sense, interviews during two phases of field work with representatives from cooperatives and farmers affiliated to Fairtrade revealed that farmers received training, information services and market facilitation at the start of the certification process but not as part of a long-term strategy.

Interestingly, the affiliation of farmers to certifications negatively influenced the performance of some variables compared to the control groups. For example, the involvement in the Nespresso AAA_1 certification, negatively influenced access to subsidies and/or cash transfers, while participation in Fairtrade negatively affected, over time, the hours of training received or their participation in coffee tasting trials. Likewise, involvement in Nespresso AAA_2 negatively affected the hours of training in GAP, as the quantitative data detected a negative significant difference-in-difference between the two groups of producers.

Regarding the second development area, that of investments in infrastructure and adoption of GAP to improve upgrading trajectories, there was no clear trend for the 8 indicators or criteria tested to inquire whether there were differences between certified and non-certified producers. In terms of the variables used to test changes in the levels of investments in post-harvesting facilities, both milling and drying infrastructure, the study did not detect significant differences-in-difference favouring coffee growers

participating in certified value chains, both the two strands of Nespresso producers and Fairtrade farmers. Meanwhile, in terms of the adoption of agricultural techniques to facilitate upgrading trajectories, positive significant differences were observed in those variables associated to record keeping in AAA_1 producers. As for Fairtrade (FLO), significant and positive difference in difference estimates were observed only in relation to the amount of kilos of synthetic fertilizers applied to one hectare annually.

Remarkably, the comparison between the two strands of Nespresso data revealed that, overtime, a significant higher share of AAA_2 producers invested in soil analysis and applied on average a statistically higher amount of synthetic fertilizers at endline, added to the fact that a higher share of producers keeps records of methods and materials used in coffee production to aid decision making. This is a very interesting finding that shows that the upgrading trajectories between two groups of producers selling coffee to the same initiative not only could differ but also that these differences could have important repercussions in key economic measures as chapter 7 will show. The circumstances that motivated this steeper learning curve of GAP´s adoption by Nespresso AAA_2 producers cannot be determined on the basis of the data contained in the surveys, nor the interviews conducted during fieldwork, and should be subject of further research.

There are two likely and interconnected explanations for the lack/scarcity of positive impacts in the upgrading trajectories as a result of participation in Fairtrade and Nespresso AAA_1: (i) the fact that conventional producers, operating as a control group, have been also participating from the policy measures implemented by Colombian coffee authorities, with the support of national government and industry organizations, focusing on yield improvement and sustainable cultivation (section 5.3 describes these measures), and (ii) the budget allocated by donors to assist farmers‘ upgrading trajectories, included those inputs leveraged from different stakeholders, are still very modest to assure the durability of impacts and make a difference due to the growth in total number of coffee growers participating in VSS and the precariousness of the economic situation of most of them.

Regarding the first explanation, the support from coffee institutions that also covered non-certified producers could explain a lot of findings. This confirms the argument that the regulatory structure of the country (Ponte 2008, Neilson and Pritchard 2009) or the richness of the local institutional environment (Humphrey 2008) affects the dynamics of value chain participation and the upgrading trajectories of the coffee growers. The fact that non-certified producers were also benefiting from a range of institutional programmes (such as extension services, strategic investments, plant breeding programmes, pest and diseases management strategies, among others), could mask the

benefits of certification. [48] As such, at least in Colombia, it is not possible to claim that certifications have no, or very limited, positive effects; it can be argued, instead, that positive benefits from certification were largely offset by positive benefits from institutional programmes that were also available to non-certified farmers. It is possible that in a country where there were no such programmes for non-certified farmers, positive results from certification might be stronger. However, there are no impact evaluations on the effect of institutional interventions on upgrading strategies to support this argument. Without any doubt the role of government and coffee institutions in assisting conventional producers has been determinant to offset the effect of the interventions of VSS in Colombia.

Concerning the second explanation, some authors have mentioned that participation in VSS may lead to upgrading opportunities (Lee, Gereffi et al. 2012), in particular in value chains where coordination between roaster, traders and farmers tends to be stronger (Muradian and Pelupessy 2005), such as the sustainable quality programme from Nespresso or Fairtrade. However, it has been pointed out that the growing number of producers (and the total volume of coffee) that actually participate in these commercialization channels is the main limitation for further upgrading as the private and public inputs aimed at supporting producers and enhancing their upgrading capabilities have been fairly marginal to make a change (Muradian and Pelupessy 2005). It is a key consideration for the Colombian coffee sector, as the substantial growth rates of affiliation to VSS experienced in the last few years (see Figure 5.11) has increased the demands not only for financial and technical assistance to adjust production systems, but also for aid in kind to improve access to proper post-harvest processing facilities. In a context of lack of coordination among different stakeholders to assign their cash and in kind support, of a widespread feeling that the roasters and traders' contribution is very modest compared to their returns, and of declining farmer's incomes due to the drop in Colombia's harvest, it is possible that the rising production costs from certified production and the erosion of the price premiums, might have reduced the producers´ incentives to innovate in the different spheres of upgrading.

The analysis becomes even more complex when the indicators were assessed by farm size. What emerged from the study is that the size of the farm conditioned the potential upgrading opportunities provided by the involvement in VSS. Although evidence has shown that smallholders can participate from VSS markets (Henson, Jaffee et al. 2009), the fact is that small scale farmers below one hectare, both treated and not-treated, are at a disadvantage compared to certified large scale farmers above five hectares in term

[48] It is important to remember that each coffee grower in Colombia pays a "contribution" of between 4% and 6% for each pound sailed, depending on the level of the Colombian FOB sale price. This money is used by the FoNC to fulfil its duties of providing both essential public goods and services, as well as to perform its role as a buyer of last resort (please see section 5.3 Institutions and Regulatory framework).

of access to institutional arrangements to facilitate upgrading and investments and adoption of GAP to improve upgrading trajectories.

In this sense, the outcomes of the analysis for the set of 15 matched indicators by farm size were not encouraging and draws a bleak picture for small producers (see Table 6.7). In most of the comparisons, quantitative evidence shows that a statistically lower proportion of producers below one hectare, particularly those who are not certified, received lower levels of support from local organizations and private stakeholders in areas related to access to credit, training and technical assistance in GAP. Additionally, small farmers carried out a significant lower level of investments needed to supply good quality coffee or increase land productivity (yield per hectare) to assure lower unit production cost, and higher value and volume.

Evidence, therefore, pointed out that small farmers do not mobilise the same level of resources that certification schemes appear to mobilise to support the involvement of larger certified farmers. A trend that was corroborated during field work interviews and focus groups with key stakeholders of the coffee chain in Colombia, in the sense that high yielding, bigger, more trained and capable farmers were on average chosen for the certified programmes. This finding was also corroborated by farmers and stakeholders affiliated to UTZ Certified in Colombia (García, García et al. 2014) and by Ruben (2014, p 42) who pointed out that VSS “are not necessarily inclusive” for too small farmers.

In terms of the conventional producers, at some point, this situation could be seen as a source of exclusion that contributes to their further marginalization with a view to certification. This is an important fact, as it raises questions about the sustainability of those schemes that are promoting the adoption of the requirements of VSS among farmers who face deeper structural constraints that limited the potential of certified production to fulfil basic needs and provide a sustainable livelihood (Ruben 2014). In particular, those farmers who live in survival units and do not have the capacities, the incentives and assistance to implement upgrading strategies and participate in the market of certified coffees.

As will show in the next chapter, not all of the producers can take advantage of VSS programmes and for that reason policies aimed at supporting producers and enhancing their upgrading capabilities need to be realistic (Humphrey 2005, ECLAC 2008). Even if producers improve their upgrading trajectories, the impossibility to modify their scale-constraints makes impossible to generate sustainable income over time. As has been pointed by Ruben (2014, p. 42) in many cases the size of the farm is “too small to provide a decent income in the long run”. Under these circumstances, producing and selling sustainable coffee is a subsistence economic activity without the potential to become a structural solution to take farmers out from the subsistence agriculture and assure

outcomes in livelihood activities related to poverty reduction, improving of employment conditions, food security, risk and vulnerability, among others.

Therefore, as a way to increase their credibility, a big step from VSS initiatives would be to recognize that specialty and certified markets cannot be the unique tool to help very small coffee producers to overcome structural constraints faced for decades. The costs of certified production are high and may take years and a prolonged investment before they are recouped, particularly without institutional support, access to financial resources and training about standards and certifications. As such, differentiated coffee is a viable solution to generate income in a sustainable way only for those coffee growers with the scale, the microclimate advantages and the necessary skills and support to innovate in different spheres of economic upgrading to produce quality certified products. As Henson and Jaffe (2006) pointed out, significant markets will remain where food safety standards are less onerous, at least in the medium term, which offers market opportunities for countries (and agribusinesses and producers therein) with lower levels of food safety management capacity.

Meanwhile, for countless small producers, complementary measures of market and social incorporation should be designed to ensure their access to formal employment needed to alleviate their poverty or increase the family income above the poverty line. This includes, for example, employment in new productive sectors or access to non-farm rural employment and other types of income derived from agricultural activities. However, as will be mentioned in the next chapter, this implies a structural transformation of the entire economy (Ruben 2014). Until this happens, the options of last resort for the smallest farmers are those related to low-productivity services and the subsistence agriculture associated to the production of coffee and other cash crops that do not provide them the possibility to overcome the problems associated with being poor or small through the agricultural production.

CHAPTER SEVEN

How have two value added initiatives, such as Fairtrade and Nespresso, affected the pattern of revenues for producers, and their exposure to risk and vulnerability in the specialty coffee value chain?

7.1 Introduction

This chapter addresses how participation in two Voluntary Sustainable Standards (VSS), such as Fairtrade and Nespresso, affected the pattern of revenues for producers, and their exposure to risk and vulnerability in the specialty coffee value chain

The main goal is to inquire whether the adoption of specific upgrading strategies, depicted in Chapter 6, in compliance with the competitive requirements of two VSS has achieved its purpose of improving socio-economic conditions for producers. It is important to quantitatively assess whether farmers benefit, not only in terms of increased cash incomes and profitability, or the distribution of wealth towards a higher share of the revenues from the value chains in which they participate, but also in terms of the evolution of important livelihood-related variables. As these concerns are addressed, special attention is paid to the differences between larger and smaller coffee growers.

The rationale behind this question relies on the fact that until now there has been little agreement on how the outcomes generated by the adoption of selected voluntary sustainability standards (VSS) impact the welfare and livelihoods of coffee producers, particularly smallholders. Additionally, and specifically in the coffee sector, several researchers agree that there is an increasing demand for effective impact evaluation, outcomes and possibilities of these initiatives over time (Blackman and Rivera 2010, Von Hagen and Alvarez 2011, Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012, Hoebink, Ruben et al. 2014, Ruben 2014).

Chapter 2 illustrated to what extent the literature provides answers to these questions and identifies the knowledge gaps. Chapter 3 explained the methodology used in this thesis in order to look for answers to these questions. Chapter 4 and 5 describe the global and Colombian coffee industry respectively. Chapter 6 contributed to the debate on the impact of the adoption of voluntary sustainability standards on the upgrading strategies of coffee growers in a four-year period.

This chapter is divided into three sections. After this introduction, the second section is broken into four sub-sections: (i) the empirical analysis of the gross margins at farm level (revenues minus cost); (ii) analysis of the household income by farm size (small, medium and large); (iii) the distribution of income and margins between different segments of

the coffee global value chain; and (iv) the analysis of key livelihood related variables affected by the involvement of producers in VSS. In the third and final section, the main conclusions are stated.

7.2 How have the production and trade of Nespresso AAA and Fairtrade affected the pattern of producers' revenues, and their exposure to risk and vulnerability in the specialty coffee value chain?

This section is broken in four subsections. The first assess the overall economic impact at farm level of the production and trade of coffee labelled as Nespresso AAA and Fairtrade to test if these schemes have strengthened coffee growers' economic conditions by increasing net incomes and profits. In the second an analysis for three different size of farms (small, medium and large) is carried out to test whether the participation in VSS have contributed to raise the gross household incomes (income coming from coffee, cash crops and off-farm activities) and fulfil their portrayed goal to reduce poverty and improve livelihoods. As will mentioned below, none of the studies reviewed include information on the respective producers' incomes by farm size as all the data is an average of the total sample of producers. The third, carried out an exercise to see in these initiatives have promoted differential redistributive outcomes from roasters and retailers to the producers.

Finally, the fourth subsection, incorporates horizontal concerns of GVC analysis to inquire whether the adoption of specific upgrading strategies to comply with the competitive requirements of two VSS have succeeded their goal of improving key livelihood-related variables from those producers participating in these schemes, as well as their households and their workers. This includes changes in variables related to working conditions, salaries, income diversification, food security, dependency from coffee, gain and/or loss of household and farm assets (changes in wealth), job security, worker participation, among others. Additionally, the study includes changes in household perceptions.

As in the previous Chapter, Propensity Score Matching (PSM) was implemented in combination with Difference in Difference approach (DID). This allowed for control of selection bias and the influence of independent factors.

7.2.1 Economic conditions

Three core economic measures per hectare were considered to identify the pattern of returns and profitability:[49] (i) the gross margin, which is the difference between the

[49] Data is presented in COP (1 USD = ± 2,000 COP) not only to avoid the interference of macroeconomic variables in the conversion process, but also because producers are paid in COP for their coffee.

gross revenue and the production cost;[50] (ii) the gross revenue, where coffee yield per hectare and farm gate prices per kilogram constitute the two main variables, including the extra income earned from the premium;[51] and (iii) production cost, including the labour and input cost. The analysis includes key variables, such as changes in the daily agricultural wage (which is compared to the daily legal wage in Colombia), the percentage of the total labour that is remunerated, and the participation of hand labour in total cost.

These measures help probe if coffee production is profitable and helps coffee growers fulfil their basic needs and achieve a sustainable livelihood. The costs of certification were not included as the survey revealed that nearly 100% of all the producers did not pay for the costs and fees required to maintain the certified status within one or other of the programmes, see Table 6.1 above.

It is expected that the impact of adoption of GAP on yields and quality, plus the extra efforts and additional investments needed to gain certification, pay off in terms of higher gross margins over non-certified producers (Ponte 2008).

7.2.1.1 Gross margins, revenues, and production costs per hectare

It is important to question whether the affiliation of coffee growers to Fairtrade and Nespresso, compared with similar control producers, resulted in significant differences in gross margins over time.[52] Is important to know if changes in the income have strengthened coffee growers' socioeconomic conditions. Moreover, whether this increase in margins is, not only as a result of higher prices or higher proportions of coffee sold as certified, but also due to higher productivity, or due to lower production costs after improvements in the management of the main inputs used for coffee production, namely labour, chemicals, and machinery.

After an extensive literature review of the impact of Fairtrade, Nelson and Pound (2009) suggested that producers have received both direct and indirect benefits of adopting this sustainable scheme. In general, the main conclusion from these studies is that Fairtrade has provided a favourable economic opportunity for smallholder farming families, in particular during the coffee crisis at the beginning of the century (Raynolds 2009). The statistical results of these works concluded that the impact of sales of certified coffee resulted in significantly better prices for farmers (Bacon 2005). Field work interviews with representatives of Fairtrade organizations confirmed that during

[50] Section 3.7.2.1 describes the operationalization of these concepts.
[51] The survey does not discriminate between the sustainability and quality premium.
[52] The profit per hectare was not calculated, since information about depreciation cost was not included in the survey.

the first years of this century Fairtrade certification reduced income vulnerability and provided benefits through the price premiums, which were then invested in productive infrastructure, debt payments, provision of credit, costs of certification and educational projects in the communities of producers, among others.

In contrast, more recent research, using rigorous impact studies, conclude that the involvement in Fairtrade lead to modest increases in farmer incomes and farm production methods. Comparison studies indicate that although there is greater productivity and better prices on farms producing coffee with the Fairtrade label, these differences were not large enough to generate a clear effect, in particular because producers could not sell all their harvest as certified and effectively receive a price premium (Fort and Ruben 2008, Beuchelt and Zeller 2011, Ruben and Fort 2012). This is explained by the excess supply of Fairtrade coffee and the limited effective demand that producers faced for the certified product (this issue was mentioned in Chapter 4 and 5).

In the case of the Nespresso AAA Sustainable Quality programme, there is no systematic analysis of value chain available, nor any published rigorous impact studies about its effects related to revenues, and whether they improve the living conditions and farmers' livelihoods. Most of the information accessible has been published by Nestle-Nespresso at its web page with the exception of couple of unpublished studies (INCAE 2011, CRECE 2013).

As a result, as VSS in the coffee sector have increased, a growing body of researchers consider there is no compelling evidence that coffee certifications are achieving their purported socioeconomic and environmental benefits. They argue that few of the available impact studies are based on rigorous counterfactual comparison. Additionally, very few involve at least two rounds of surveys to assess differences over time to attempt to measure changes in income, expenditure or assets for participating households (Ruben and Fort 2012) and for this reason it is difficult to attribute outcomes and impacts directly to certifications (Giovannucci and Potts 2008, Blackman and Rivera 2010, Alvarez and Von Hagen 2011, Von Hagen and Alvarez 2011, Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012, Hoebink, Ruben et al. 2014, Ruben 2014).

In order to contribute to this debate, and based on the findings of the three rounds of surveys, this section measures changes in gross margins, revenues, and productions costs per hectare, as well as trends in key variables related to the farm gate price, the quantity of coffee sold to the sustainable market, the daily agricultural wage, and the proportion of paid labour.

Gross margin (gross revenues minus production cost)

The overall impact of certification on farmer income is the gross margin per hectare. In this sense, although farmers affiliated to Nespresso AAA_1 and Fairtrade obtained significantly higher gross margins per hectare during some of the three surveys, these differences disappear at endline and no significant differences-in-differences over time are reported (line 2 Table 7.1). This result, in the case of Fairtrade certification, confirms the findings of Ruben and Fort (2012) and Hoebink *et al.* (2014: p. 8) in the sense that the total gross margin is "modest and fairly limited".

Interestingly, the comparison between the two strands of Nespresso producers, which are in two different stages of certification, revealed that AAA_2 producers obtained higher gross margins over time as significant difference-in-difference were reported compared to AAA_1 producers (line 10 Table 7.1). As was mentioned in Chapter 6, to interpret DID results, it is important to take into account the differences between years for both certified and controls as well as the differences within years between the target and controls. Only when the difference for the treated group between the first and second years exceeds the difference between the first and second years for the controls is there potential of program-related impact, assuming other factors are accounted for (Bennet, Giovannucci et al. 2013).

In terms of trends, the difference in the gross margins for Nespresso AAA_1 and Fairtrade, and their respective control groups,[53] narrowed successively. For the former, differences decreased from 165% in 2008; to 56% in 2009; to 31% in 2011. Similarly, for Fairtrade producers, differences in gross margins decreased – from 70%; to 39% and 44% compared to conventional producers during the same years. For farmers affiliated to Nespresso AAA_2, the gross margins during the surveys of 2009 and 2011 were, on average, 11% below, and 102% respectively higher than AAA_1 producers.

Gross revenues (average farm gate price * yield per hectare)

The quantitative research revealed that AAA_1 producers had significant higher revenues compared to their respective control group during the three surveys. Although at a decreasing rate compared the control group during the surveys capturing data from 2008, 2009, and 2011 - 97%, 45% and 24% respectively (line 1 Table 7.1). As a result, the data does not reveal significant differences in differences.

Meanwhile, there was significant difference-in-difference detected that shows that, over time, the involvement in Fairtrade implies higher revenues compared to

[53] Two separate groups of Nespresso at two different stages of certification are analysed in order to compare the impact on producers of the strategic changes adopted by the Nespresso AAA Sustainable Quality Programme. The first group of producers labelled as AAA_1 adhered to the Programme in 2008, while the second group labelled as AAA_2 join to the programme in 2009.

conventional farmers (line 5 Table 7.1). During the three surveys Fairtrade producers had significantly higher revenues compared to their respective control group 54%, 56% and 77% respectively during the three surveys. Interestingly, the data revealed significant differences in differences that show that the involvement in Nespresso AAA_2 imply higher revenues compared to Nespresso AAA_1 farmers (line 9 Table 7.1).

Average farm gate prices, sales of certified coffee, and production levels

Although Nespresso AAA_1 and Fairtrade coffee growers received significantly higher average farm gate prices for their coffee compared to conventional produces during the three surveys, quantitative data revealed that this effect disappeared at endline and no significant differences-in-difference between certified and conventional producers were detected (line 3 and 7 Table 7.1). In contrast, the comparison between the two strands of Nespresso producers revealed significant difference-in-difference between the groups as participation in Nespresso AAA_2 influenced higher farm gate prices compared to the group labelled as AAA_1 (line 11 from Table 7.1).

From quantitative data, it also emerges that price differentials between certified and conventional coffee decreased over time, while the share of the harvest sold as certified increased over time, see Table 7.2 (this trend was also mentioned in Chapter 5, Figure 5.13). For example, for Nespresso AAA_1 the average farm gate price was 12%; 13% and 9% higher than the group of conventional producers during the three surveys capturing data of 2008, 2009 and 2011 respectively, meanwhile the amount of coffee sold as certified rose from 78% during the first survey to nearly 90% during the third survey. For Fairtrade, while price differential was 14%; 16% and 7% higher compared to the control group during the three surveys respectively, the sales of Fairtrade certified coffee increased from 3% to 55%[54] between the first and the third survey. For those producers labelled as Nespresso AAA_2 the share sold as certified coffee rose from 80% during the second survey to 92% during the third survey, Table 7.2, while farm gate prices were 3% below the farm gate price of Nespresso AAA_1 and 1% above during the second and third surveys respectively.

This results contradicts the idea that higher prices should be the more direct measure of impact of economic sustainability (Daviron and Ponte 2005) and one of the main mechanisms through which sustainability private standards have been thought to reduce poverty and improve the livelihood of producers (Panhuysen and VanReenen 2012, COSA 2013). Data shows how certified farmers' gross revenues have been hit by cyclically low coffee prices that also affects certified coffees.

[54] A number of works have mentioned the gap at farm level between the volume of sustainable coffee that is produced as certified and actually purchased as certified for most of the sustainable initiatives (Giovannucci, Liu et al. 2008, Potts, Van der Meer et al. 2010, García, Ochoa et al. 2013a, Potts, Lynch et al. 2014). This issue was raised in chapters 4 and 5.

Table 7.1 Income variables for Nespresso and Fairtrade certifications – 2008 - 2011

		2008			2009			2011			Difference in difference		
		AAA_1	Ctrol		AAA_1	Ctrol		AAA_1	Ctrol		coef.	SE	
1	Gross revenue (Thousand COP/ha)	5,999	3,044	***	8,692	6,008	***	6,599	5,317	*	-1,444	901	
2	Gross margin[£] (Thousand COP/ha)	2,974	1,124	***	5,965	3,827	***	3,802	2,911		-936	848	
3	Average farm gate price (Thousand COP/@[§])	61.4	54.8	***	83.3	73.5	***	100.6	92.3	***	0.8	2.0	
4	Yield of dry parchment coffee (@/ha)	92.5	53.5	***	98.0	79.6	**	63.4	52.6		-28.0	10.0	***
		Fairtrade	Ctrol		Fairtrade	Ctrol		Fairtrade	Ctrol		coef.	SE	
5	Gross revenue (Thousand COP/ha)	5,711	3,714	***	6,457	4,132	***	7,794	4,412	***	1,255	695	*
6	Gross margin - (Thousand COP/ha)	1,537	903	**	2,438	1,753	**	3,445	2,399	**	470	572	
7	Average farm gate price (Thousand COP/@[§])	54.6	47.7	***	71.6	61.7	***	96.9	90.6	***	0.0	1.7	
8	Yield of parchment coffee (@/ha)	103.5	73.8	***	87.4	65.4	***	77.8	44.0	***	10.17	8.89	
					AAA_2	AAA_1		AAA_2	AAA_1		coef.	SE	
9	Gross revenue (Thousand COP/ha)				8,287	8,341		8,829	7,343	*	2,750	870	***
10	Gross margin - (Thousand COP/ha)				5,031	5,629		5,363	4,039	*	2,699	739	***
11	Average farm gate price (Thousand COP/@[§])				79.3	81.9	*	103.6	102.2		5.9	2.1	***
12	Yield of parchment coffee (@/ha)				102.8	96.7		82.44	69.53	*	21.7	9.2	**

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations

*** p< 0,01; ** p< 0,05; * p< 0,1; 1 USD = ± 2,000 COP

[£] Gross margin = (Gross revenue - production cost); [§] @=12.5 kg;

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

Table 7.2 Percentage of coffee sold as certified and conventional

	Nespresso AAA_1			Fairtrade			Nespresso AAA_2	
	2008	2009	2011	2008	2009	2011	2009	2011
Original certification	78%	85%	90%	3%	39%	55%	80%	92%
Other certifications	0%	1%	0%	5%	2%	1%	2%	0%
Conventional	21%	15%	10%	92%	59%	43%	18%	8%

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

Surprisingly, the surveys showed that participating coffee growers did not choose to adopt multiple certifications at farm level, which is a common trend as described in Chapter 5 (Graph 5.17) and has been depicted in plenty of works (Giovannucci, Liu et al. 2008, Potts, Van der Meer et al. 2010, García, Ochoa et al. 2013a, Potts, Lynch et al. 2014). For example, for the group of producers affiliated to Fairtrade, the sales of certified coffee in other schemes decreased from 5% to 1% between the first and the third survey. For the two groups of Nespresso producers, this share was below 2%. As a result, the attribution of the effects of certification is simplified, since practically 100% of producers in this study only adopted a one VSS.

Meanwhile, looking at the differences over time for the yield of coffee per hectare,[55] the quantitative data revealed that coffee growers within Nespresso AAA_1 and Fairtrade certification do not have more productive farms and do not obtain better yields than their counterparts, as the difference-in-difference analysis against conventional producers was not significant statistically (Line 4 and 8 Table 7.1). For example, although the analysis of Nespresso AAA_1 producers showed significant higher production levels during the first and second survey, this effect disappeared by the third survey and negative significant differences over time are reported. Similarly, Fairtrade coffee growers have more productive farms and obtained better yields during 2008, 2009 and 2011 compared to control producers, but over time these effects disappear and no significant differences-in-difference are reported.

Interestingly, the comparison between the two strands of Nespresso producers revealed that the involvement in Nespresso AAA_2 compared to Nespresso AAA_1 positively influences higher production volumes per hectare as positive significant difference-in-difference were found (Line 12 Table 7.3). The yield per hectare from those farmers

[55] It is important to mention that the three surveys were carried out in a context of a strong reduction in Colombian coffee production. In chapter 5 was mentioned that the primary factor responsible for this situation was the long and strong rainfall period affecting coffee flowering and coffee bean formation. Rains in 2008 were well above the historic average. The increase in humid conditions caused increased outbreaks of leaf rust, which were not limited to lower elevations as normal, but also affected coffee production at higher elevations. For example, in 2008 production reached 12,515,000 bags but collapsed to 8,664,000 the year after. Additionally, extremely high fertilizer prices in 2007, 2008 and 2009 discouraged growers from applying fertilizer to their trees.

affiliated to Nespresso AAA_2 were, on average, 6% and 19% respectively higher than AAA_1 producers during the surveys of 2009 and 2011.

One important finding that emerged from field interviews is that producers are not completely aware of the impact that certification has on changing farming practices and yields, and in turn on their socio-economic viability .[56] Their main motivation to participate in certified programmes is to secure higher prices for their coffee, while only a few expressed that their decision to adopt VSS was to improve farming and management practices. In this sense, a Data Envelopment Analysis (DEA) study conducted by Perdomo *et al*. (2007) indicates that the Colombian farmers have the potential to increase yields using similar levels of inputs as their more productive and technical efficient counterparts from Vietnam, Costa Rica, or Brazil.

Data revealed that significant gross revenues are more easily achieved by reaching higher yields than with higher farm gate prices. Therefore, the adoption of the requirements imposed by VSS helps farmers earn more through gains in efficiency, improved crop quality, increase in production, and controlling farm costs, than through higher prices and premiums (Giovannucci and Ponte 2005, Panhuysen and VanReenen 2012, García, Ochoa et al. 2013a, García, Ochoa et al. 2013b). Nonetheless, interviews during the fieldwork revealed that extension services and VSS operators would often highlight higher prices and premiums as the main motivation to encourage producer participation, and do not mention the impact VSS will have on productivity and reduced costs. Based on the data, however, participating producers need to understand, that the gross margins depend not only on price premiums, but particularly from key investments and adoption of good agricultural practices that lead to higher yield and quality.

Production cost, daily wage, and share of paid labour[57]

Were certified coffee growers able to increase their technical efficiency, and did this result in reduced production costs? Survey quantitative data revealed that significantly higher revenues from coffee sales for certified producers were not enough to offset significantly higher production costs.

The quantitative research revealed that Fairtrade producers had both significantly higher production costs per hectare and production costs per unit produced (Average

[56] Yield and quality, for example, is affected by the adoption of the package of good agricultural practices required by the certifications programmes, which includes intensity of training, levels of fertilisation applied to the trees, the average age of the coffee trees and the share of trees planted with rust resistant varieties, among other variables (Duque and Bustamante 2002).

[57] Production costs include: hired labour, coffee-picking, milling, the renewal of old trees, management, control of pests, diseases and weeds, and input costs (chemical fertilization as well as pest, disease and weed control). Certification costs are not included as it is usually paid by others actors such as NGOs, development agencies, government, buyers or producers organizations (please see section 4.4.3).

unit cost) compared to their respective control group during the three surveys with data of 2008, 2009 and 2011. In terms of hectare, for example, differences increased at an increasing rate - 49%, 69% and 116% respectively. Additionally, there was a significant difference-in-difference detected that shows that the involvement in Fairtrade requires significantly more cash expenditure per hectare over time in their plantations compared to conventional farmers (line 6 and 7 Table 7.3).

Contrastingly, for Nespresso AAA_1 growers, the data did not reveal significant differences in the change over time. Although the quantitative analysis revealed significant higher production costs compared to the control group during the three surveys, this difference decreased over time. In terms of the production cost per produced unit, the analysis did not reveal statistical differences during the survey and over time (line 1 and 2 Table 7.3).

Interestingly, the comparison between the two strands of Nespresso producers at different stages of certification did not reveal significant difference-in-difference overtime, this despite the fact that AAA_2 producers have significantly higher production costs per hectare compared to AAA_1 group during the survey capturing data of 2009 (line 11 Table 7.3). However, this difference decreased and disappeared over time. Additionally, the quantitative analysis revealed negative significant difference-in-difference between the two groups, which means that over time those producers labelled as Nespresso AAA_2 had significant lower production costs per unit produced compared to those producers labelled as AAA_1 (line 11 and 12 Table 7.3).

In terms of the proportion of paid labour among treated and no-treated producers, the involvement in the Fairtrade certification negatively affected the proportion of paid labour compared to conventional producers. Despite the fact that during the first survey, Fairtrade producers paid a significant higher proportion of the labour at farm level, this difference was overcome (line 8 Table 7.3). Contrastingly, the comparison between the two strands of Nespresso producers did not reveal differences during the surveys of 2009 and 2011 (line 13 Table 7.3).

Survey data also revealed that producers (both certified and non-certified) have been compensating for their lack of resources to cover their cost of production not only by systematically decreasing the share of paid labour, but also paying a daily agricultural wage below the legal wage in Colombia (lines 4, 5, 9, 10, 14, and 15 Table 7.3).[58] Overall, the share of paid labour, both for certified and control producers, decreased substantially with a downward trend and the daily wage was barely a fraction of the legal wage established by the government for rural workers.

[58] The survey quantifies the number of unpaid daily salaries per year. See Appendix 1 with the questionnaire survey (Table 3).

Table 7.3 Production cost, percentage of paid labour, daily wage

		2008		2009		2011		Difference in difference	
		AAA_1	Ctrol	AAA_1	Ctrol	AAA_1	Ctrol	coef.	SE
1	Cost - (Thousand COP/ha)	3,025	1,921 ***	2,727	2,182 **	2,797	2,406 *	-264	263
2	Average unit cost (Thousand COP/@[§])	41.8	46.9	31.2	35.3	66.7	65.4	9.4	9.4
3	% Paid labour	59%	50% **	47%	42% *	37%	36%	-0.05	0.04
4	Wage per day (COP/per day)	8.4	8.3	9.6	8.5 **	10.1	9.5	339.0	424.5
5	*Legal wage per day (COP/per day)* [§§]	21.5	21.5	23.2	23.2	25.0	25.0		
		Fairtrade	Ctrol	Fairtrade	Ctrol	Fairtrade	Ctrol	coef.	SE
6	Cost - (Thousand COP/ha)	4,174	2,810 ***	4,020	2,379 ***	4,349	2,013 ***	1,227	342 ***
7	Average unit cost (Thousand COP/@[§])	44.0	40.0 *	52.2	38.9 ***	59.9	57.5	2.918	4.803
8	% Paid labor	61%	49% ***	38%	38%	29%	28%	-0.11	0.04 ***
9	Wage per day (COP/per day)	17.7	17.7	15.2	15.0	16.7	14.4 ***	1,909	856 **
10	*Legal wage per day (COP/per day)* [§§]	21.5	21.5	23.2	23.2	25.0	25.0		
				AAA_2	AAA_1	AAA_2	AAA_1	coef.	SE
11	Cost - (Thousand COP/ha)			3,256	2,712 **	3,466	3,304	42	248
12	Average unit cost (Thousand COP/@[§])			35.6	31.1	56.3	64.4	-13.4	6.7 **
13	% Paid labor			53%	53%	46%	45%	0.03	0.04
14	Wage per day (COP/per day)			10.3	9.5 **	11.3	10.6 *	443	546
15	*Legal wage per day (COP/per day)* [§§]			23.2	23.2	25.0	25.0		

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations

*** p< 0,01; ** p< 0,05; * p< 0,1; 1 USD = ± 2,000 COP

[§] @=12.5 kg; [§§] National Department of Statistics

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

For example, for those farmers labelled as Nespresso AAA_1, the share of paid labour decreased from 46% at the first survey to 37% by the third survey (50% to 36% for the control group), meanwhile for Fairtrade certified producers the share of paid labour decreased from 61% to 29% (49% to 28% for the control group). Additionally, although with some differences between certifications due to regional issues, the comparison with the legal salary revealed that Nespresso AAA_1 producers paid, on average of the three surveys, around 40% of the legal wage. Meanwhile, Fairtrade salaries ranged around 71% of the legal wage.

In this regard, producers revealed during interviews that most of them were unable to cover their increasing costs of production[59] in a context of low coffee prices, higher labour costs and higher prices for farm inputs such as fertilizer, and with the downward trend in coffee production. In these circumstances, they compensate the lack of resources by reducing the most expensive inputs, namely labour, and the frequency and intensity of fertilisation.

Following Riisgaard et al. (2010, p. 197) one viable interpretation of this situation is that farmers who face stricter quality and performance requirements that raise their production costs and face unstable farm gate prices "may react by unilaterally restructuring their labour-sourcing regimes at workers' expense, passing costs and risk on to the most vulnerable" to try to smooth household consumption. Relevant literature also argues that households, in the face of shocks, counteract by selling productive assets like cattle, underlining the importance of crop diversification or by increasing child labour (Cortés, Santamaría et al. 2014).

Turning to the difference over time for the proportion of paid labour, although the analysis revealed a statistical significant difference between Nespresso AAA_1 and conventional farmers at the first and second survey, these differences disappear at endline and no significant difference over time was reported. Contrastingly, the involvement in Fairtrade certification negatively affected the proportion of paid labour compared to conventional producers. Despite the fact that during the first survey Fairtrade producers paid a significant higher proportion of the labour at farm level, this difference was overcome and negative significant difference-in-difference between the two groups was detected. Finally, the comparison between the two strands of Nespresso producers did not reveal differences during the surveys of 2009 and 2011.

[59] Added to higher cost of inputs (mainly fertilizers), producers claim that they need to finance several types of direct and indirect costs involved with standard compliance and meeting the certifications' requirements. This includes, in particular, the transition cost and those expenses incurred in order to keep the certified status of within one or another programme. For example, fertilization represents between 35% and 46% of the total production cost

Concerning the daily agricultural wage, the study confirms that difference-in-difference is not significant between Nespresso AAA_1 and conventional farmers, although Nespresso producers paid significant higher wages per day during the second survey. Meanwhile, differences-in-difference was significant between Fairtrade and conventional, which implies that farms affiliated to Fairtrade paid higher salaries compared to conventional farms.

Although all certifications support the minimum wage according to national labour laws, this is a requirement difficult to comply with. Both interviews during field work and quantitative data revealed that the wage in many regions is a fraction of the legal minimum wage as a result of a trade-off between the availability of hand labour and demand (line 4 and 9 Table 7.3). For example, in the highly rural department of Nariño, where there is a proliferation of small farms and higher supply of hand labour, the rural salary is very low. Compared with the department of Huila, with an economy less dependent from agriculture, the salaries are near to the legal salary (line 4 and 9 Table 7.3).

7.2.2 Household income by farm size

The main goal of this sub-section is contribute to the debate about the role of voluntary sustainability standards to improve the economic sustainability of small producers, one of the key objectives for most of these initiatives[60] (Giovannucci and Potts 2008, Panhuysen and VanReenen 2012, COSA 2013, Panhuysen and Pierrot 2014). In this sense, recent impact studies using difference analysis with propensity score matching indicate that the potential impact of participation in voluntary sustainability standards on poverty and livelihoods are limited and modest (Hoebink, Ruben et al. 2014, Ruben 2014). In this sense, Ruben (2014) pointed out that the small size of the farm of some producers is the main structural factor that limits their ability to obtain a decent income in the long run (Hoebink, Ruben et al. 2014) and to fulfil basic needs and achieve a sustainable livelihood. Yet, none of the studies reviewed include information on the respective producers' incomes by farm size, since all the data is an average of the total sample of producers.

In order to reach the objective proposed in this subsection, two steps were taken. In first place, an analysis of key variables is carried out for certified producers considering three farm sizes during three harvest seasons. Including: gross household year income, gross income generated by coffee, proportion of income generated by coffee, proportion of paid labour, yield, area from the coffee plot, and proportion of the farm planted in

[60] This sub-section does not include a discussion on the comparison between certified and non-certified producers, this comparison is available in the Appendix 7. The analysis is carried out only for certified producers from three size of farms, as the main goal is to reflect on the levels of household income and their capacity to improve livelihoods and reduce poverty.

coffee. In second place, a welfare analysis is carried out by comparing the monthly income per capita in an average household of certified farmers with the per capita monthly household income defined by DANE (Spanish acronym for the National Department of Statistics) as needed to be above the extreme poverty and poverty lines.

The household monthly income per person is calculated by taking the annual gross household income divided by a 12-month period and then by the total number of family members living together.[61] Following the division stated in chapter 3, and based on previous work of the author about the agrarian structure of the coffee sector in Colombia (García and Ramírez 2002, García 2003), three farm size were defined: small farmers below one hectare; medium size farmers between one and five hectares; and large farmers above five hectares.

Small farmers (below one hectare)

The analyses of the data from Table 7.4 reveals four important findings. Firstly, the size of the coffee plots (line 5 Table 7.4) is too small to generate a level of income per year from coffee production high enough to secure a sustainable livelihood (line 2 Table 7.4), fulfil basic needs and reduce poverty. Moreover, the contribution of potential increases in yield could do little to increase the overall household income (line 1 Table 7.4) due to the fact that the size of the coffee plot is too small to make a significant contribution.

Secondly, regarding the composition of the income of the farmer households, the proportion of the income that is generated by coffee sales is worryingly high (line 3 Table 7.4). For example, for Nespresso and Fairtrade certified farmers, the share of income generated by coffee sales is around 65% and more than 80% of the total household income respectively. As a result, farmers are extremely dependent on coffee, since both local economies or their participation in VSS[62] do not offer non-farm production activities or off-farm income, and wage labour for opting out of coffee production. According to the field interviews and the quantitative data there are no alternatives in other markets of the primary sector or other growing sectors out from the agrarian economy. This situation is faced not only to small farmers, but also to medium and larger farmers, in particular those affiliated to Fairtrade, as shown in Table 7.4.

[61] The household income was deducted from two variables: (i) the annual gross revenues coming from selling coffee and (ii) the proportion of income generated by coffee. This is due to the fact that the survey did not collected information about the amount of cash income coming from non-farm production activities, wage labour, crop activities, sales of cattle, or monetization of food stables to consume at the household level.

[62] The survey administered in the study asked the farmers on potential sources of income linked to their participation in VSS. Farmers were consulted on potential additional income coming from non-farm activities or off-farm income (for example, incomes coming from agro-tourism, technician, community promoter, and other): at the end, less than 1% responded positively this question.

Table 7.4 Household income and income from coffee and related variables by farm sizes

			Nespresso AAA_1			Fairtrade			Nespresso AAA_2	
			2008	2009	2011	2008	2009	2011	2009	2011
Below 1 ha	1	Gross household income - (Thousand COP)	1,576	5,498	3,636	661	2,646	2,162	4,699	5,856
	2	Gross margin from coffee[£] - (Thousand COP)	1,003	3,813	2,135	559	2,276	1,795	2,974	3,480
	3	% of income coming from coffee	64%	69%	59%	85%	86%	83%	63%	59%
	4	% of paid labor	48%	41%	32%	50%	27%	11%	43%	37%
	5	Average coffee area (ha)	0.49	0.54	0.55	0.48	0.51	0.53	0.60	0.61
	6	Yield (@[§]/ha)	106.0	124.5	62.4	148.0	147.9	75.5	102.3	89.7
	7	% of the farm area planted in coffee	88%	95%	96%	91%	87%	88%	95%	94%
Between 1 and 5 ha	8	Gross household income - (Thousand COP)	3,511	5,847	7,481	2,683	4,099	7,859	11,741	12,960
	9	Gross margin from coffee[£] - (Thousand COP)	2,651	3,813	4,715	2,228	3,615	6,881	8,715	8,910
	10	% of income coming from coffee	76%	65%	63%	83%	88%	88%	74%	69%
	11	% of paid labor	66%	50%	38%	58%	36%	25%	54%	46%
	12	Coffee area (ha)	1.7	1.1	1.3	1.8	1.8	1.9	1.7	1.7
	13	Yield (@[§]/ha)	88.7	85.3	65.6	99.7	81.7	84.1	108.0	84.0
	14	% of the farm area planted in coffee	74%	74%	76%	72%	74%	73%	83%	82%
Above 5 ha	15	Gross household income - (Thousand COP)	3,267	12,973	11,284	6,539	9,448	14,540	16,078	10,914
	16	Gross margin from coffee[£] - (Thousand COP)	1,535	7,567	4,965	5,567	8,301	12,400	12,600	8,031
	17	% of income coming from coffee	47%	58%	44%	85%	88%	85%	78%	74%
	18	% of paid labor	56%	67%	63%	70%	46%	41%	71%	70%
	19	Coffee area (ha)	7.3	2.7	1.9	3.4	3.9	4.0	3.5	3.7
	20	Yield (@[§]/ha)	43.7	58.6	49.4	95.8	86.5	68.0	75.0	53.8
	21	% of the farm area planted in coffee	19%	42%	32%	44%	44%	45%	57%	53%

Means are estimated by linear regression. Kernell matching were used only on common-support observations.

[£] Gross margin from coffee = (Gross revenue - production cost); [§] @=12.5 kg;

1 USD = ± 2,000 COP

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

Thirdly, as was mentioned in the previous section, gross margins from coffee have been at the expense of reducing the share of paid labour. Although field interviews indicate that traditionally family members who work on the farm are not always paid for their labour, quantitative evidence signalled that a reducing share of the labour at the certified farms have been being remunerated. For example, for Nespresso AAA_1 the proportion of remunerated labour decreased from 48% at the first survey to 32% by the third survey, while for Fairtrade producers this share decreased from 50% to 11% during the same period of time.

Fourthly, the highest ratio between the coffee-growing area and farm size among smallholders (line 7 Table 7.4), increased the households' economic dependency on coffee production, making coffee producers more vulnerable to negative exogenous changes in the price or strong reductions in coffee production. Additionally, in the Colombian context, Dube and Vargas (2013) show that negative exogenous changes in the price of coffee exacerbate conflict-related violence in districts in which farmers' income depends more heavily on the coffee harvest. They find that a sharp fall in prices during the 1990s lowered wages and increased violence differentially in municipalities cultivating more coffee.

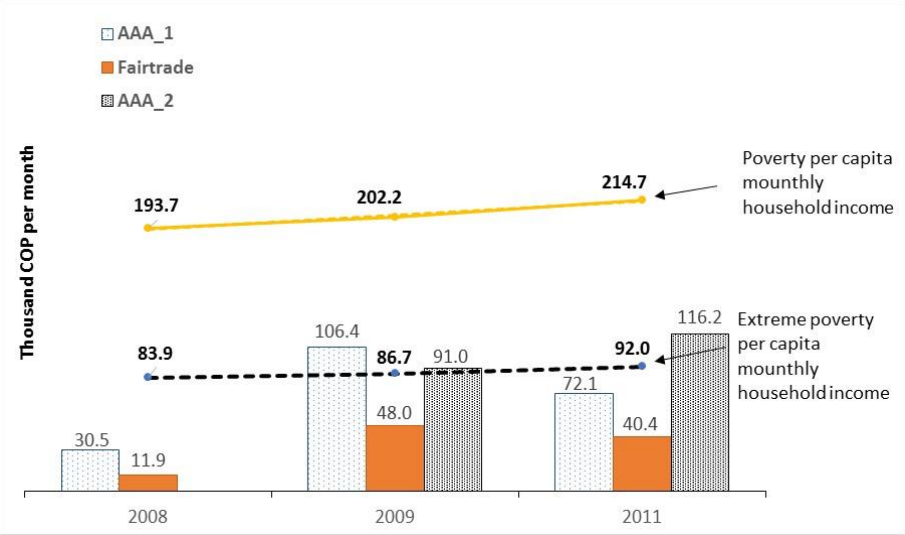
The precarious conditions of smallholders located in farms below one hectare is even more evident after contrasting the per capita monthly household income from certified producers (revenue generated from selling coffee - certified and conventional, plus the income from cash-crops and earned off-farm), with the household monthly income per capita needed to reach the poverty line or the extreme poverty line.

For example, the Figure 7.1 shows how the per capita monthly household income from those farmers affiliated to Fairtrade (8% of the total farmers of the sample of Fairtrade, see Table 3.3) represented 14%; 55% and 44% of the monthly income per capita needed to reach the line of extreme poverty during the surveys with data from 2008, 2009 and 2011 respectively. Considering how dependent producers are on coffee, close to 85% of the household income comes from coffee production, and the limited contribution of off-farm employment or farm diversification, the ability to generate sustainable rural livelihoods is essentially unavailable.

Meanwhile, the situation for Nespresso AAA_1 farmers (42% of the total sample of Nespresso AAA_1) is not any better than of other groups. Their per capita monthly household income represented 36% and 78% of the income per capita needed to reach the extreme poverty line during the surveys of 2008 and 2011 respectively. During 2009, for example, although their monthly income per capita was 23% above the income needed to reach the extreme poverty line, it only represented 53% of the income deemed necessary to reach the poverty line. For producers labelled as Nespresso AAA_2

(26% of the total sample of Nespresso AAA_2), their per capita monthly income was 45% and 54% below the per capita poverty line during the surveys of 2009 and 2011 respectively.

Figure 7.1 Household monthly income per capita for small certified farms VS poverty and extreme poverty per capita monthly household income



Source: Author's own calculations based on CRECE surveys and DANE

Medium-size farmers (between 1 and 5 hectares)[63]

Medium size producers also face significant challenges to generate a decent income to improve livelihoods and reduce poverty (line 8 and 9 Table 7.4). Their situation is slightly more promising compared to smaller farmers. In particular, they have more room to increase household income by increasing yield per hectare and production volumes due to bigger coffee plots (line 12 Table 7.4). Additionally, lower levels of coffee specialization compared to small farms (the ratio between coffee growing area and farm size) gives them the ability to increase diversification with cash crops (line 14 Table 7.4).

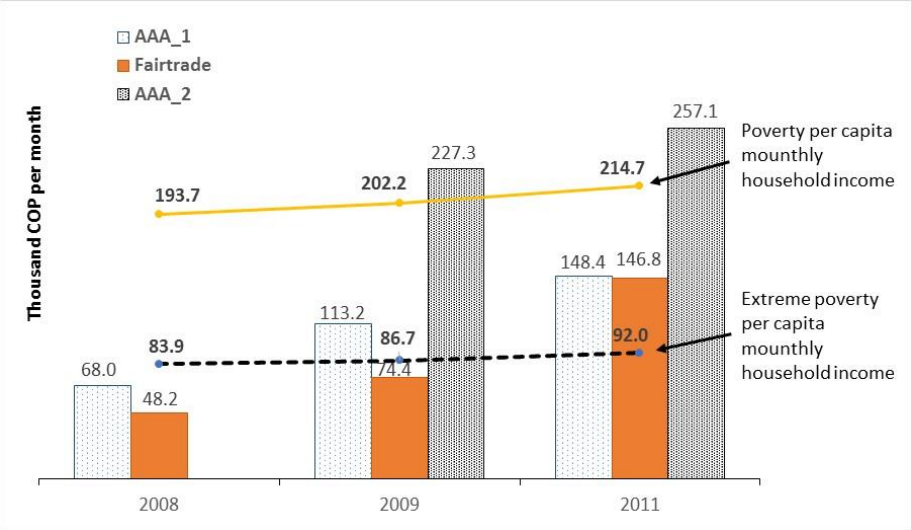
The picture that emerges from the data shown in Table 7.4 revealed similar characteristics to those described for small farmers. For example, referring to the composition of the income of farmer households, data shown higher levels of dependency on coffee earnings, in particular for Fairtrade farmers as nearly 85% of their income come from coffee sales (line 10 Table 7.4).

Added to this, data revealed a downward trend in the percentage of the paid labour (line 11 Table 7.4), although not as strong as in farms below one hectare. For example, the share of unpaid labour for Fairtrade certified producers decreased from 58% at the first

[63] As was showed in Table 3.3, medium-size farmer predominates in the sample as 51% of Nespresso AA to AAA farmers, 63% from Nespresso AAA farmers, and 65% of Fairtrade farmers belong to this stratum.

survey to 25% by the third survey, meanwhile for Nespresso AAA_1 producers the share of unpaid labour decreased from 66% to 38%.

Figure 7.2 Household monthly income per capita for medium certified farms VS poverty and extreme poverty per capita monthly household income



Source: Author's own calculations based on CRECE surveys and DANE

In terms of household monthly income per capita, the picture that emerges from the three surveys confirms the challenges farmers of medium sized farms face when striving for a better income. For example, the Figure 7.2 reveals that the income per capita in Nespresso AAA_1 and Fairtrade farms were below the line of poverty during the three surveys. For example, the per capita monthly household income from those farmers affiliated to Nespresso AAA_1 represented 35%; 56% and 69% of the monthly income per capita needed to reach the line of poverty during the surveys with data from 2008, 2009 and 2011 respectively. The situation for Fairtrade certified farmers is similar. Their per capita monthly household income represented 25%; 37%; and 68% of the income per capita needed to reach the poverty line during the surveys capturing data from 2008, 2009 and 2011 respectively. Only the group of farmers of Nespresso AAA_2 reached an income able to surpass the line of poverty, 12% and 19% during the surveys with data from 2009 and 2011.

Larger size farmers (above 5 hectares)

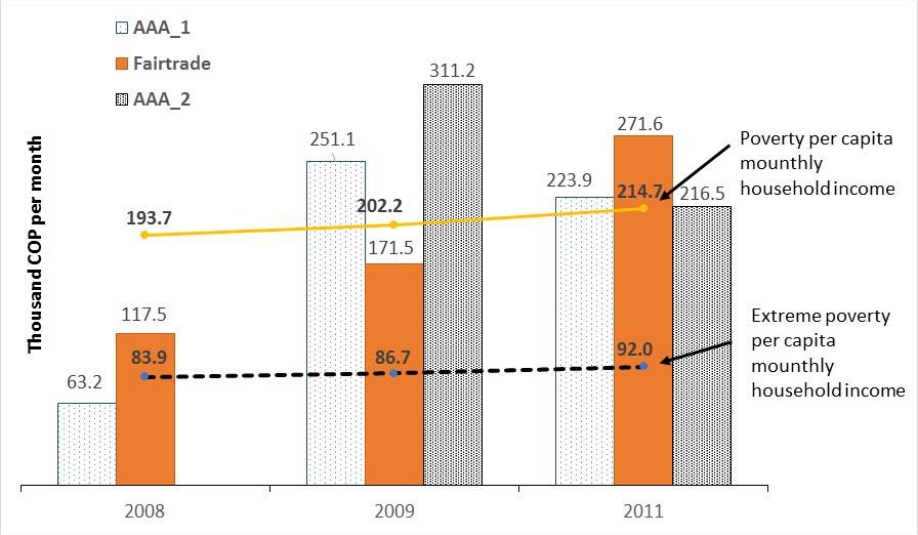
Finally, the situation for producers that own farms above 5 hectares also requires significant efforts to reach a decent income from agricultural production (coffee and diversification) and surpass the line of poverty.

The analyses of the composition of the income of farmer households from Table 7.4 revealed a great dependency on income generated from coffee despite lower levels of coffee specialization (the ratio between coffee-growing area and farm size), particularly

among Fairtrade and Nespresso AAA_2 producers (line 17 and 21 Table 7.4). This implies not only that crop diversification with other cropping activities has not been an important element to increase other sources of income for farmers, but also that producers with larger farms become extremely vulnerable to shocks and unable to mitigate risk. Although in a lower proportion than in smaller farms; higher incomes generated from coffee have been at the expense of reducing the share of paid labour, in Fairtrade farms in particular (line 18 Table 7.4). Finally, the inverse relationship between productivity and farm size indicates plenty of opportunities to increase coffee volumes and consequently household income

In terms of household monthly income per capita, the three surveys indicate that producers who own farms above 5 hectares have overcome poverty levels, but still are vulnerable to key risk factors due to higher dependency from coffee, lower yield productivity and scarce sources of income diversification.

Figure 7.3 Household monthly income per capita for large certified farms VS poverty and extreme poverty per capita monthly household income



Source: Author's own calculations based on CRECE surveys and DANE

In this sense, for example, the per capita monthly household income from those farmers affiliated to Fairtrade (28% of the total farmers of the sample of Fairtrade, see Table 3.3) represented 61% and 85% of the monthly income per capita needed to reach the poverty line during the surveys of 2008 and 2009 respectively. During 2011, their income was above the poverty household monthly income per capita by 26%. The situation for larger Nespresso AAA_1 certified farmers (7% of the total sample) is very similar. Their per capita monthly household income represented 33% of the income per capita needed to reach the poverty line during the survey of 2008, meanwhile during the surveys of 2009 and 2011 their per capita monthly household income was higher the per capita poverty income by 24% and 4% respectively. Similarly, the average household income

per-capita of those affiliated to Nespresso AAA_2 were 54% and 1% above the line of poverty during 2009 and 2011 respectively.

7.2.3 Have VSS promoted redistributive outcomes from actors downstream in the coffee value chain to coffee producers and other?

The ratio between the price paid to coffee growers and the retail price is a way of verifying if these value added initiatives contribute to a redistribution of the value added in the coffee GVC toward producers. A similar methodology, with different variations in their main variables, has been applied to many GVC analysis in tropical agricultural commodity markets by other authors (Talbot 1997, Fitter and Kaplinsky 2001a, Ponte 2004, Daviron and Ponte 2005, Gibbon 2005, Valkila, Haaparanta et al. 2010, Rueda and Lambin 2013) to show how processing companies located at consuming countries are receiving an increasing share of the retail price.

Some scholars, however, have emphasized that the concept of using the producer's value share of the retail product in the GVC analysis is not useful (Lewin, Giovannucci et al. 2004, Gilbert 2008). They argue that new and increased value is being added to the products in the consuming countries through processing, marketing and transformation at the retail level. In this same sense, Daviron and Ponte (2005) mentioned that certain brands and distributors have the ability to capture the majority of the added value of coffee through the control of symbolic or abstract aspects of production, such as services or the atmosphere in coffee shops. This includes, for example, flavouring, mixing in milk products and providing a specific consumption ambiance (Ponte and Kawuma 2003).

However, despite these arguments and ethical discussions, the idea of comparing changes in the share of the retail price accrued by farmers sourcing different types of specialty coffees provides an idea of the markets in which the coffee growers are moving.

As such, the evolution and the differences in the ratio for two different value added strategies compared to conventional Colombian coffee between 2009 and 2012 were analysed. The analysis includes: a "differentiation from above" strategy as followed by Nestle through Nespresso AAA Sustainable Quality^{TM} Program.; a "differentiation from below" strategy as used in the production and trade of conventional coffee that is both part of the "100% Colombian Coffee" programme and the exports of regional coffees. Finally, a "differentiation from the middle" strategy as represented by the production and trade of certified Fairtrade coffees.

Table 7.5 presents the evolution and the differences of the ratio of the price paid to the coffee growers and the retail prices for two different value added strategies compared to “100% Colombian coffee”. The price at farm gate price is roasted equivalent which mean that the price paid to coffee growers for the parchment coffee has been adjusted for the weight losses due to drying during the process of roasting (1.19 lb of parchment coffee=1lb of roasted coffee) (ICO 2011h).

At a glance, what is clear from the farm gate prices column is that certified producers have been receiving comparatively higher farm-gate prices compared to conventional producers that supply the “100% Colombian Coffee”. However, the proportion of the retail price accruing to farmers investing in the certifications coffees is less than expected. As such, for this exercise the value added initiatives studied in this work do not promote differential redistributive outcomes from the roasters and retailers to the producers. Interestingly, coffee producers of conventional coffees received a higher proportion of the retail prices. Meanwhile high value coffees are a better business for roasters and retailers, as a higher proportion of the retail price is captured at this node of the value chain.

For example, between 2009 and 2012 producers adhered to Nespresso AAA received the higher farm gate price, around 9 % above conventional producer. However, farmers capture a smaller proportion of the retail price – around 5%, while the proportion accruing to the roaster and retailers were on average 95% (see Table 7.6). Meanwhile, for those producers affiliated to Fairtrade, farm-gate prices were on average 7% above conventional and capturing on average 16% of the retail price and roasters and retailers capture on average 84%. On the other hand, farm gate prices for conventional producers represent on average 25% of the retail price, and retailers and roasters captured the remaining 75%. Regarding the value captured by local exporters, who can sell both to roasters and to importers, as was shown at the Figure 3.5, data revealed that on average they captured between 1% and 8% of the retail price. However, this data was only available for 2009 and 2010 and for that reason does not appear in the Table 7.4.

This information is consistent with some of the findings of Daviron and Ponte (2005) for the Tanzania–Italy value chain for high quality Robusta coffees and Rueda and Lambin (2013) for high-quality single serve coffee sold in the Colombia-United States value chain. In these cases, the farm gate price represented 5% and 6% of the retail price, respectively. Gilbert (2008) has explained that the relative coffee content of the final consumption was low, as such only around half of the retail coffee prices are attributable to the FOB price of coffee as new and increased value is being added to the products in the consuming countries through processing, marketing and transformation at the retail level. This is the case of Nespresso and its technique to prepare single-serve high-quality coffee.

Table 7.5 Distribution of coffee income for three types of coffee – 2009 to 2012

Type of coffee	Year	Farm-gate price (USD/lb.)*	Proportion of retail price	Retail price (USD/lb.)**	Proportion of retail price
Conventional	2009	1.4	27%	4.3	73%
	2010	1.8	30%	5.0	70%
	2011	2.4	34%	5.9	66%
	2012	1.6	23%	5.6	77%
Fairtrade	2009	1.5	14%	9.2	86%
	2010	1.9	17%	9.4	83%
	2011	2.5	21%	10.2	79%
	2012	1.7	13%	10.6	87%
Nesspresso AAA	2009	1.6	4%	30.4	96%
	2010	2.0	5%	30.9	95%
	2011	2.5	6%	34.3	94%
	2012	1.7	4%	34.3	96%

Source: Author's own calculations based on data from 10 Cooperatives of coffee growers; ShymphonyIRI Group (2013) and Nespresso Boutique Selfridges London (2009, 2010, 2011, 2012)

*Roasted coffee equivalent

**VAT excluded

Surprisingly, redistributive incomes resulting from branding from below were less than expected. Although producers received higher farm-gate prices, regional coffees do not reconfigure the power relations, and the structure of governance within the value chain for coffee. In contrast, branding from the middle offered a better deal for coffee producers.

7.2.4 Risk and vulnerability[64]

This subsection aims to integrate horizontal concerns into the value-chain framework through the analysis of the impact of the adoption of two VSS on key livelihood related variables. As mentioned in Chapter 2, the idea of linking vertical and horizontal concerns in GVC analysis has been stated by Ponte (2008) and then developed by Bolwig et al. (2010) and Riisgaard et al. (2010). Therefore, understanding the integration of coffee growers within value chain structures requires more than an analysis of producers' incomes, or changes in income distribution. Rather, it calls for attention to how participation, in particular value chains structures, generate outcomes in livelihood activities related to poverty reduction, improving of employment conditions (i.e. job security and salaries), food security, risk and vulnerability, among other key variables (Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010).

[64] The author follows the definition of vulnerability and risk of Bolwig et al. (2010)

Based on the availability of information this subsection assesses differences over time for a set of key related variables, including: households' dependence on income from the sale of coffee, income diversification with cash crops other than coffee, food security, accumulation of capital through availability of farm and household assets, working conditions at farm level, changes in production cost and coffee prices. Finally, a set of variables regarding households' perceptions during the three surveys is tested for differences between certified and non-certifies producers.

Household income

As described above in subsection 7.2.2, coffee producers have a very deep dependency on coffee as the primary source of cash income at household level due to the reduction in cash crops other than coffee, and almost no access to non-farm rural production activities and wage labour – both on treated and non-treated producers.

However, there were some contrasting differences between certifications. While there are not difference-in-difference between Nespresso AAA_1 and conventional producers, contrastingly, participation in the Fairtrade certification positively influences dependence from coffee compare to conventional producers.

For example, the study revealed a significant difference between Nespresso AAA_1 and conventional producers during the first survey, but these differences disappeared at endline and no significant differences over time are reported (line 1 Table 7.6). On average of the three surveys, the proportion of income generated from coffee was 65% and 61% for certified and non-certified producers respectively. Similarly, the comparison between the two strands of Nespresso, did not find significant differences during the two surveys and overtime (line 11 Table 7.6).

Meanwhile, Fairtrade producers are highly dependent from the income generated by coffee, and significant differences were observed during the three surveys and significant difference-in-difference between the groups was detected. On average of the three surveys, the proportion of income generated from coffee was 86% and 70% for certified and non-certified producers respectively (line 6 Table 7.6).

This situation makes coffee producers' livelihood systems extremely vulnerable and affects their future capacity to withstand external shocks, such as adverse weather, market volatility or changes in production. The situation is exacerbated by virtually non-existent non-farm rural employment and low incomes from other agricultural activities.[65] With respect to this last point, farmers were consulted during the three

[65] As was mentioned above, Dube and Vargas (2013) show that negative exogenous changes in the price of coffee exacerbate conflict-related violence in districts in which farmers' income depends more heavily

surveys on the potential additional income coming from non-farm activities or off-farm income linked to their participation in VSS (for example, incomes coming from agro-tourism, technician, community promoter, and other). Farmers revealed that few alternative livelihood options are available as less than 1% responded positively this question. This situation was confirmed by some interviewees who expressed dissatisfaction with the scarce access to off-farm income and diversification markets with cash crops other than coffee to assure alternative sources of income and lower risks.

Cash and food crops

Diversification away from a traditional and popular non-perishable cash crops like coffee is not easy in Colombia (Giovannucci, Leibovich et al. 2002). This situation increases the households' economic dependency on coffee and therefore makes producer more vulnerable to specific risks. As was mentioned in Chapter 4, the FNC holds among its responsibilities guaranteeing the purchase at a fair price of all coffees offered which comply with predetermined and nationally known quality requirements. Additionally, there have been price subsidies that guarantee a price support for coffee production, subsidies for the renovation of coffee plantations, and subsidies to buy fertilizers, among others subsidies.

Therefore, in the Colombian context, what emerges is that most of the crops at coffee farms are exclusively associated with food security while there have been little diversification into other cash crops that could help balance this dependence (Clavijo, Jaramillo et al. 1994). Additionally, field interviews revealed that there are no programmes to promote diversification and the government has not played a key role in any diversification initiatives. For example, there are no programmes helping producers to assess specific issues related to appropriate technology, risks, necessary skills, financing, information, and markets, among others. In general, on-farm diversification is mainly the result of farmers' own initiatives.

The survey data was consistent with this information. For example, referring to the coffee growers' efforts to produce food staples to improve food's consumption at the household level and increase their levels of food security, evidence revealed that there were not significant differences-in-difference between certified and non-certified farms. In this sense, on average among 90% and 99% of both certified and conventional farmers indicated that they produced crops for own consumption (lines 3, 8, and 13 Table 7.6).

Meanwhile, the quantitative research show differences in terms of the proportion of producers that grow cash crops other than coffee (i.e. plantain, maize, beans, tomatoes,

on the coffee harvest. They find that a sharp fall in prices during the 1990s lowered wages and increased violence differentially in municipalities cultivating more coffee.

yucca, etc) between treated and non-treated producers. For example, a significant higher proportion of Nespresso AAA_1 producers growing cash crops during the first and third surveys, although the difference in the change over time is not significant. On average of the three surveys, the proportion of farmers growing cash crops were 67% and 54% for certified and non-certified producers respectively (lines 2 Table 7.6).

Contrastingly, the involvement in Fairtrade negatively influences the proportion of producers growing cash crops, indicating that certified farmers have lower levels of crop diversification compared with non-certified farmers (lines 7 Table 7.6). Evidence showed that during the three surveys there were a significant higher proportion of conventional producers reported having planted products in their farms to sell at local markets and gain some extra earnings. As result, negative significant effects were found over time. On average of the three surveys, the proportion of farmers growing cash crops were 27% and 66% for certified and non-certified producers respectively.

This situation, which has been reported by Fort and Ruben (2008) and Alvarez and Von Hagen (2011) for Fairtrade producers in Peru and Costa Rica, could be analysed from two different perspectives. Firstly, as is the case with the Fairtrade farmers interviewed, higher prices and improved market access for their coffee during the coffee crisis at the beginning of the century made these farmers more optimistic, which and this encouraged them to reduce the area dedicated to other cash crops. On the other hand, however, the efforts to increase the level of coffee specialization and avoid diversifying into other cash crops, has increased the dependency on the producers on their coffee earnings. By concentrating their activities on a single source of income without ensuring income diversification, producers do not spread risks and become more vulnerable to fluctuations in the market, adverse weather and less resilient to external shocks. Despite the fact that the production of food staples by Fairtrade producers could improve food security for participating households, Fairtrade's strategy of enhancing farmers' welfare through price certainty instead of input/knowledge upgrading as other schemes (Hoebink, Ruben et al. 2014) reveals a "relatively lack [of] vision in fair trade initiatives in terms of promoting diversification of production and income" (Ponte and Kawuma 203: p. 119).

Average number of farm and household assets

Whether or not farmers were able to increase significantly their farm and household assets within a four-year interval indicates whether they are enhancing their livelihoods and overall welfare.

In this sense, this study compared changes in the wealth status among producers adhered to Nespresso and Fairtrade and their respective control groups, by testing changes during three harvests on the accumulation both of household assets (including

appliances such as televisions sets, fridge, stove, washing machine, computer, internet access, cell phone, and working animals) and farm assets (including constructions and infrastructure, vehicles, motorcycle, dryer-silo, pulping machine, becolsub, engine, chainsaw, scythe, toaster, bascule, electric generator, water pump, computer, and others). For this purpose the average number of household assets per farm ranged in a scale from 1 to 9, while the average number of agricultural assets owned by one farmer ranged in a scale from 1 to 15, both for certified and non-certified farms.

Overall, both certified and non-certified producers were able to accumulate assets between the first and the third survey (lines 4, 5, 9, 10, 14, and 15 Table 7.6). However, the analysis revealed that over time only Fairtrade and AAA_2 producers' were able to accumulate a significant higher amount of household and farms assets respectively in the difference-in-difference analysis.

For Nespresso AAA_1 producers, the study did not find significant difference-in-difference regarding either household or farm assets. Although statistically significant differences between certified and non-certified producers were observed during the three surveys for household assets and the second survey for farm assets, these differences disappeared and no significant differences over time were reported. Regarding the comparison between the two strands of Nespresso producers, the analysis did not reveal differences-in-differences about the changes in household assets. Notwithstanding, Nespreso AAA_2 producer not only showed a significantly higher amount of farm assets during the survey of 2009 compared to Nespresso AAA_1 farmers, but also significant difference-in-difference over time.

Meanwhile, the study found that involvement in Fairtrade certification does positively influence the accumulation of household and farms assets. Looking at the differences over time, the study revealed significant differences between Fairtrade and conventional producers during the three surveys regarding assets. However, significant difference-in-difference between the groups were detected only for the amount of household assets as the difference in the change over time was not significant for the comparison of farms assets.

Table 7.6 Changes in key livelihood variables

	Indicator	2008		2009		2011		Difference in difference	
		AAA_1	Ctrol	AAA_1	Ctrol	AAA_1	Ctrol	coef.	SE
1	% of family income coming from coffee	69%	61% **	67%	64%	60%	57%	-0.075	0.049
2	% of farms with cash crops other than coffee	41%	32% *	91%	89%	70%	41% ***	0.099	0.083
3	% of farms with food crops	93%	95% -	99%	96%	96%	94%	-0.002	0.041
4	Average number of assets at the household (1 to 9)[§]	3.8	3.4 **	3.6	3.2 **	4.0	3.4 **	-0.110	0.162
5	Average number of assets at the farm (1 to 15)[§§]	0.8	0.7	1.8	1.4 **	2.7	2.9	0.063	0.194
		Fairtrade	Ctrol	Fairtrade	Ctrol	Fairtrade	Ctrol	coef.	SE
6	% of family income coming from coffee	84%	74% ***	88%	69% ***	86%	67% ***	0.097	0.031 ***
7	% of farms with cash crops other than coffee	32%	60% ***	31%	74% ***	19%	64% ***	-0.176	0.071 **
8	% of farms with food crops	98%	93% **	91%	94%	97%	97%	-0.029	0.033
9	Average number of assets at the household (1 to 9)[§]	4.7	4.1 ***	4.7	3.8 ***	5.0	4.2 ***	0.386	0.191 **
10	Average number of assets at the farm (1 to 15)[§§]	2.3	1.3 ***	3.9	2.5 ***	4.7	3.6 ***	0.178	0.304
				AAA_2	AAA_1	AAA_2	AAA_1	coef.	SE
11	% of family income coming from coffee			72%	67%	67%	62%	0.010	0.043
12	% of farms with cash crops other than coffee			83%	85%	74%	70%	0.079	0.072
13	% of farms with food crops			98%	98%	96%	96%	0.000	0.031
14	Average number of assets at the household (1 to 9)[§]			4.5	4.2	4.7	4.5	-0.188	0.162
15	Average number of assets at the farm (1 to 15)[§§]			2.6	2.3	4.0	3.0 ***	1.263	0.291 ***

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations

*** p< 0,01; ** p< 0,05; * p<0,1

[§] Include televisions sets, fridge, stove, washing machine, computer, internet access, cell phone, and working animals

[§§] include constructions and infrastructure, vehicles, motorcycle, dryer-silo, pulping machine, becolsub, engine, chainsaw, scythe, toaster, bascule, electric generator, water pump, computer, and others

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

Working conditions

Whether workers benefit for labouring in certified farms is another important question that contributes to test the horizontal impacts of VSS. This study included the analysis of changes in two key variables:[66] whether workers were training in activities for farm improvement and quality issues. The second one, tested whether workers received an endowment of protective gear to carry out key tasks at farm level.

The overall picture that emerges from the data is contrasting among certifications. Fairtrade workers received a significant higher proportion of protective gear compared to control workers (particularly clothing for agrochemical sparing to comply with certification requirements during audits). However, participation in Fairtrade negatively affected the access of workers to training. Meanwhile, the involvement in Nespresso AAA_1 certification influences positively the access of workers to free training, but negatively influences the supply of protective gear to work at the farm (lines 1, 2, 5, 6 Table 7.7).

Interestingly, when comparing the two strands of Nespresso producers, the study revealed that a significantly higher proportion of the employees at Nespresso AAA_2 farms, compared to Nespresso AAA_1 farms; received training during the third survey and significant difference-in-difference overtime are reported. This is a very interesting finding as it suggests that Nespresso's producers are more interested in training because of quality concerns. Contrastingly, there were no statistical differences regarding the provision of protective gear to carry out key tasks at farm level (lines 9 and 10 Table 7.7).

Perception of market risk

Another important point of inquiry is whether upgrading strategies linked to the certification process affects the economic risks of coffee producers adhering to VSS compared to conventional producers. Two key variables were taken into account to assess changes in the coffee farmer's perception of market risk: percentage of those who perceived increases in the production cost and percentage of those who perceived a reduction in the farm gate price.

In general, and despite of statistical differences between initiatives and control producers, between 70% and 80% of the coffee growers, both certified and non-certified, complained about increases in production cost. Meanwhile, with a downward trend, a less proportion of farmers reported coffee price drops.

[66] Two additional important variables were analysed in section 7.2.1.1. The first one is related to the daily wage (which is compared to the legal wage per day in Colombia). The second one is the proportion of the total hand labour employed in the production process that is remunerated. Information at Table 7.1 shows how the share of paid labour both for certified and control producers decreased substantially with a downward trend between the surveys of 2008 and 2011 and the average daily wage in barely a fraction of the legal wage established by the government.

Survey data indicates that a significantly higher proportion of Nespresso AAA_1 producers reported being affected by higher production cost compared to conventional producers. On average 84% and 74% of the certified and non-certified producers respectively made this statement, and significant differences-in-differences overtime were reported (line 3 Table 7.7). Contrastingly, a significant lower proportion of Fairtrade producers reported increases in production cost compare conventional producers, shown by the negative values for the difference-in-difference values - on average 69% and 81% of the certified and non-certified producers respectively complain about this fact (line 7 Table 7.7). In terms of the two groups of Nespresso producers, no significant differences-in-differences were reported - on average 77% and 81% or the two groups of producers respectively complain about increases in productions cost.

Referring to the responses to the question about perceived reduction in farm gate prices, quantitative data also showed contrasting differences between VSS. For example, no significant difference-in-difference between Nespresso AAA_1 and control producers were reported. Meanwhile, overtime, farmers affiliated to the Fairtrade certification complained less about the reduction in coffee prices compare to conventional producers, shown by the significant negative values for the difference-in-difference (line 4 and 8 Table 7.7).

On important fact that emerges, refers to the differences between the perceptions related to cost increases and coffee price drops, and the quantitative data related to production cost and trends in farm gate prices presented in Table 7.1. At a glance, while Fairtrade producers are more optimistic, despite the fact that the data shows they actually face higher production costs to those of the control group. In turn, Nespresso producers perceive more economic risk in their operation despite the fact that there are no significant differences in the production costs. For example, quantitative data from Table 7.1 indicated that the production cost between Nespresso AAA_1 and conventional producers had no significant difference-in-difference. Contrastingly, involvement in Fairtade certification implied higher production costs as positive significant differences over time compared to conventional producers were reported.

Socioeconomic perceptions

The consideration of horizontal aspects of value chain in order to understand the effects of participation of coffee growers in the sustainability coffee value chain include the consideration of perceptions regarding four key variables: (i) level of income; (ii) household economics; (iii) household quality of life; and (iv) family health conditions. Coffee growers were asked to rate their perceptions of their socioeconomic conditions on a scale of 1 to 10.

Overall, the study found that certified farmers had more positive and optimistic perceptions of the change to their living conditions in comparison to the control group.

For example, for Nespresso AAA_1 producers, the study found statistically significant positive effects overtime regarding perceptions of household economics and the health of the family. Contrastingly, the study did not find significant difference-in-difference regarding changes in perceptions on the level of income or the quality of life of their families, despite the fact that statistically significant differences between certified and non-certified producers were observed during the three surveys for household quality of life and the third survey for perception about changes in the level of income (line 5 to 8 Table 7.7).

Finally, the comparison between the two strands of Nespresso producers at different stages of certification do not revealed significant difference-in-difference overtime for the perceptions of the level of income, household quality of life, and family health conditions (line 21, 23, and 24 Table 7.7). Meanwhile, regarding the perceptions of changes in the household economics, the quantitative analysis revealed negative significant difference-in-difference between the two groups which implied that over time those producers labelled as Nespresso AAA_2 had significant lower perception about this variable compared to those producers labelled as AAA_1 (line 22 Table 7.7).

Table 7.7 Changes in workers' conditions and farmers' perceptions

	Indicator	2008		2009		2011		Dif in Dif	
		AAA_1	Ctrol	AAA_1	Ctrol	AAA_1	Ctrol	coef.	SE
1	% of producers who offer free training	1%	2%	0%	0%	37%	8% ***	0.294	0.064 ***
2	% of farms that provide protective gear	10%	10%	10%	10%	30%	48% ***	-0.135	0.065 **
3	% or producers who reported cost increases	91%	81% **	78%	73%	82%	67% **	0.119	0.069 *
4	% or producers who reported coffee price drops	86%	71% ***	3%	30% ***	26%	24%	-0.079	0.073
5	Perception about changes in the level of income§	6.3	5.9	6.1	6.2	6.0	5.3 **	0.41	0.37
6	Perception about changes in household economics§	6.0	5.9	5.4	5.8 **	6.1	5.5 *	0.97	0.40 **
7	Perception about changes in household quality of life§	7.1	6.7 *	6.8	7.2 *	7.3	6.8 *	0.60	0.38
8	Perception about changes in the health of the family§	7.5	7.3	6.6	6.8	7.2	6.5 **	1.00	0.43 **
		Fairtrade	Ctrol	Fairtrade	Ctrol	Fairtrade	Ctrol	coef.	SE
9	% of producers who offer free training	3%	1%	4%	0% **	0%	33% ***	-0.369	0.0628 ***
10	% of farms that provide protective gear	46%	27% ***	51%	12% ***	81%	17% ***	0.392	0.0718 ***
11	% or producers who reported cost increases	92%	96%	84%	70% ***	31%	78% ***	-0.403	0.0704 ***
12	% or producers who reported coffee price drops	82%	93% ***	44%	28% ***	0%	29% ***	-0.176	0.0601 ***
13	Perception about changes in the level of income§	6.7	6.5	6.6	6.0 **	8.4	5.0 ***	2.78	0.39 ***
14	Perception about changes in household economics§	7.0	6.2 ***	7.0	5.9 ***	8.6	5.2 ***	2.48	0.38 ***
15	Perception about changes in household quality of life§	7.7	7.4 **	7.4	7.2	9.1	7.5 ***	1.49	0.32 ***
16	Perception about changes in the health of the family§	7.8	7.9	7.8	7.5	9.3	7.6 ***	1.56	0.33 ***
				AAA_2	AAA_1	AAA_2	AAA_1	coef.	SE
17	% of producers who offer free training			14%	0% ***	66%	43% **	0.141	0.081 *
18	% of farms that provide protective gear			15%	20%	49%	37% *	0.095	0.074
19	% or producers who reported cost increases			76%	81%	78%	80%	0.046	0.077
20	% or producers who reported coffee price drops			37%	2% ***	23%	33%	-0.322	0.072 ***
21	Perception about changes in the level of income§			6.5	6.2	6.1	6.2	0.06	0.41
22	Perception about changes in household economics§			6.5	5.3 ***	6.0	6.7 *	-0.97	0.42 **
23	Perception about changes in household quality of life§			7.4	6.9 **	7.4	7.9	-0.23	0.40
24	Perception about changes in the health of the family§			7.6	6.9 **	7.5	7.8	-0.29	0.41

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations

*** p< 0,01; ** p< 0,05; * p<0,1; § Producers rate their perceptions on a scale of 1 to 10.

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

7.3 Discussion and conclusions

This chapter provides new empirical evidence to understand the impact of Fairtrade and the Nespresso AAA Sustainable Quality programme on the socio-economic conditions of coffee growers in two regions of Colombia. It aims to integrate vertical and horizontal components in GVC analysis to integrate the study in terms of producers' incomes, or changes in income distribution, and how participation in particular value chain structures, generates outcomes in livelihood activities related to poverty reduction, improving of employment conditions, food security, risk and vulnerability, among others.

The study compares Fairtrade (FLO) and Nespresso AAA (AAA_1 hereafter) farmers with two groups of similar non-certified farmers during three rounds of surveys over a four year time interval, and compares two groups of Nespresso AAA producers (AAA_2 vs AAA_1 hereafter), which are at two different stages of certification, during two rounds of surveys over a two year interval.[67] The study used a difference analysis with propensity score matching techniques that allowed to construct rigorous counterfactual and correct for selection bias and the influence of independent factors.

The analysis revealed that those farmers participating in Fairtrade and Nespresso AAA_1 did not strengthen their economic conditions compared to similar non-certified farmers, as no statistical significant differences-in-differences were reported for the gross margins (gross revenues minus cost). Although certified farmers witnessed significant statistical differences during the three annual surveys, at the endline these differences disappeared. It is important to remember that for most of the comparisons, the differences for the certified producers during the first and third year did not always exceed the differences for the control group during the first and third year, which is a necessary condition to infer the impact of the intervention related to the treatment (Khandker, Koolwal et al. 2010, Bennet, Giovannucci et al. 2013).

Evidence also pointed out that the involvement in Fairtrade and Nespresso AAA_1 did not result in statistically significant higher productivity than conventional producers, as the analysis did not detect significant difference-in-difference over time between the two groups. In the particular case of the comparison of Fairtrade farmers with similar non-certified farmers, the surveys' quantitative data revealed that although participation in Fairtrade positively influenced higher revenues from coffee sales over time, it also affected the production cost as positive significant-difference-in-difference

[67] As was mentioned in chapter 3, two groups of Nespresso AAA's producers were analysed as an opportunity to track the impact of the strategic changes adopted by the AAA Programme and the impact on the internal upgrading strategies implemented by the same programme. The group labelled as AAA_1 adhered to the Programme in 2008, while the group labelled as AAA_2 adhered to the programme in 2009.

between the two groups of producers was detected. At the end, significantly higher revenues from coffee sales for certified producers were not enough to offset the significantly higher production costs. Contrastingly, for Nespresso AAA_1 there were no differences for these two variables.

Recent cross-country surveys employing rigorous impact studies involving at least two rounds of surveys to assess differences over time have reached similar conclusions (Fort and Ruben 2008, Blackman and Rivera 2010, Beuchelt and Zeller 2011, Ruben and Fort 2012, Hoebink, Ruben et al. 2014). In the case of Fairtrade, for example, these studies showed that involvement in this initiative lead to modest increases in farmers' incomes and improvements in farm production methods (Hoebink, Ruben et al. 2014). Comparison studies indicate that, although there is greater productivity and better prices on farms producing coffee with the Fairtrade label, these differences were not large enough to generate a clear effect in the gross margins (Fort and Ruben 2008, Beuchelt and Zeller 2011, Ruben 2014). In this sense, Arnould et al. (2009: p. 199) indicate that in economic terms "Fairtrade is not a panacea for the third-world poverty" (Arnould, Plastina et al. 2009).

The few available evidence for the Nespresso AAA Sustainable Quality programme indicates that those farmers adhered to the programme exhibit significant higher levels of performance compared to control farmers in indexes related to social, environmental and economic conditions during a two year interval (CRECE 2013).[68] Additionally, the quantitative data revealed significant differences in differences showing that the involvement in Nespresso implied a higher net income per produced unit (US cents/kg) overtime compared to control farmers (García, Ochoa et al. 2013c). However, these impact studies do not reveal whether this initiative affects the revenues by farm size, or improves farmers' living conditions and livelihoods overtime.

Worryingly, the surveys data also showed that VSS do not assure good jobs as the informality in the coffee labour market has grown. Quantitative data indicated that producers have been compensating their lack of resources to cover the increasing production cost not only by systematically decreasing the share of paid labour between the first and the third survey, but also paying a fraction of the minimum legal wage established by the government. For example, although the study finds that, over time, Fairtrade producers paid significantly higher daily wages, it also showed that a significantly lower proportion of labour at farm level were paid compared to non-certified producers.

[68] The social index includes indicators that reflect working practices, living conditions, occupational safety and health conditions and coffee farmers' social perceptions. The economic index includes variables that are associated with market knowledge, land productivity and farmer yield, production costs, net income and perception of business opportunities. The environmental index includes Good Agricultural Practices (GPA) adoption, soil and water conservation measures and agrochemical handling.

Additionally, regarding the average farm gate prices, quantitative data revealed that overtime there were no statistical significant differences-in-differences between Fairtrade or Nespresso AAA_1 with their respective non-certified counterparts. Although certified producers received significantly higher average farm gate prices for their coffee compared to conventional producers during the three surveys, and the share of the harvest sold as certified increased between the first and third survey, it is also true that the quantitative data revealed that price differentials between certified and conventional coffee decreased over time as was also shown in Figure 5.13.

The main conclusion that can be drawn from these outcomes is that it is a critical situation for those producers who are participating in these initiatives and have viewed differentiated coffee with VSS as a potential tool to achieve economic sustainability, reduce poverty and improve their livelihoods. In this sense, some authors have warned about the commoditisation or mainstreaming of the specialty and sustainable coffee market (Daviron and Ponte 2005, Giovannucci and Ponte 2005, Raynolds 2009), in particular, if rewards accruing to farmers investing in the certifications requirements are less than expected (Lewin *et al*., 2004; Muradian and Pelupessy, 2005), and do not assure profits for the growers (Brando 2012). More recently, and based on quantitative data, Ruben (2014, p. 41) pointed out that the impact of VSS in addressing poverty and livelihoods is limited and "should not be overestimated" as certified production cannot be the only tool to boost producers´ socioeconomic status (PCS 2015).

Based on the aforementioned results for Nespresso AAA_1 and Fairtrade, the question of how sustainable these standards actually are is pertinent. All the producers expect significant price premiums as well as significant gross margins, not only as fair compensation to offset the higher production costs and efforts of meeting the competitive requirements of VSS (Potts, Fernandez et al. 2007), but also as a measure of impact of economic sustainability (Daviron and Ponte 2005). In light of this, when there is no correlation between the price and the recognition of a producer's sustainable practices (Ruben and Fort 2012), as most of the farmers interviewed complained about during field work, it becomes more difficult for a producer to justify the costs of sustainability (Giovannucci 2008) and strengthen the credibility of VSS (Ruben 2014).

Contrarily, other authors have pointed out that it is prudent to de-emphasise price premiums as a reason for entering these markets since these premiums could eventually diminish (Lewin, Giovannucci et al. 2004) – as it clearly has been happening. For some analysts , the main arguments for those who promote these programmes must go beyond higher prices for coffee growers (Ponte and Kawuma 2003) as there are hidden benefits associated with the adoption of the competitive requirements imposed by the standards and certifications' systems (Brando 2012). In this sense, although participation in VSS not necessarily assure a better economic performance or social well-

being of producers (Muradian and Pelupessy 2005, Lebel 2012), these initiatives can facilitate (catalyse) upgrading strategies (Lee, Gereffi et al. 2012) and help farmers to earn more money through gains in efficiency, improved crop quality, increase in production and controlling farm costs in the medium and the long term. Notwithstanding as was shown in Chapter 6, with the exception of those producers labelled as Nespresso AAA_2, value chain participation in Fairtrade or Nespresso AAA_1 do not necessarily lead to differences-in-differences against conventional producers neither adopting upgrading strategies needed to increase their returns nor the level of institutional assistance to participate in these chains.

In this sense, the comparison between the two groups of Nespresso coffee growers (Nespresso AAA_1 and Nespresso AAA_2, which adhered to the programme in 2008 and 2009 respectively) produced surprising results by revealing important differences favouring the AAA_2 group. After two rounds of surveys with a two-year interval and identical methodology, the study revealed that AAA_2 producers obtained higher gross margins over time as significant difference-in-difference were reported compared to AAA_1 producers. The study also found significant difference-in-difference in farm gate prices and production of coffee (yield per hectare) and, related to this, significant differences-in- differences that show that the involvement in Nespresso AAA_2 brought higher revenues compared to Nespresso AAA_1. Interestingly, the comparison revealed that the involvement in AAA_2 did not imply a significant difference-in-difference overtime in the production cost.

This improved performance of the Nespresso AAA_2 group, can be explained with data in Tables 6.6. These show that there were key significant differences-in-differences revealing that the involvement in AAA_2 positively increased the adoption of key agricultural practices to improve upgrading trajectories. For example, as was found in Chapter 6, over time a significantly higher proportion of producers affiliated to AAA_2 used soil analysis, applied higher levels of synthetic fertilizers to the soil, adopted GAP after training, and keep detailed records of methods and materials used in coffee production to aid decision making. The circumstances that motivated this steeper learning curve of GAP by Nespresso AAA_2 producers cannot be determined on the basis of the data contained in the surveys, nor the interviews conducted during fieldwork, and should be subject of further research.

However, simply because certified producers can sell their product at a profit does not guarantee that VSS are achieving their original purpose of improving the welfare and livelihoods of producers, smallholders in particular. In this sense, previous studies revised do not discriminate information on producers' incomes, dependency from coffee or shares of paid labour by farm size, since all the data is an average of the total sample of producers. This study, however, contributes to the debate on the role of VSS

in improving the economic sustainability, through a welfare analysis for three different farm sizes (small farmers below one hectare; medium size farmers between one and five hectares; and large farmers above five hectares).

The analysis of smaller farmers,[69] in particular, highlights at least three important findings: (i) the size of the coffee plots is too small to generate a level of income from coffee production high enough to secure a sustainable livelihood, fulfil basic needs and reduce poverty; (ii) farmers are extremely dependent on coffee, since local economies do not offer opportunities for opting out of coffee production, and there are no alternatives for incorporation in other formal markets of the primary sector or other growing sectors out from the agrarian economy; (iii) gross margins from coffee have been obtained at the expense of reducing the share of paid labour and increasing the under-employment and informality in the labour market.

The precarious conditions of smallholders located in farms below one hectare becomes more evident after contrasting the per capita monthly household income from certified producers, with the household monthly income per capita needed to reach the poverty line or the extreme poverty line. In this sense, the total income is still below the extreme poverty line of COP 4,200 per person per day.[70] The picture that emerges for medium and large size farms is more promising, since there is more room for diversification with cash crops and yield increases.

These findings open a great debate: Can VSS pull the small scale producers out of a situation of poverty relying on the production of certified coffee? This study suggests that the potential impact of certified production on poverty and livelihoods of the very small farmers is limited by the simple fact that the reduced size of their farms is a structural factor that limits the potential of certified production (Ruben 2014) and makes it impossible to generate sufficient income to improve significantly their livelihoods and economic sustainability. In light of this, the long-term commercial viability and credibility of VSS should take this reality into account if it wants to continue to claim that its main drive is to enhance the welfare and livelihoods of producers.

The evidence collected signalled that involvement in VSS, as well as the production of conventional coffee, becomes a subsistence alternative of the very small farmers when

[69] In Colombia 30% of the coffee growers are living in farms below one hectare in size. Meanwhile, coffee farmers with less than one hectare farms represent 42% of the total sample of Nespresso AAA_1; 8% of the total farmers of the sample of Fairtrade, and 26% of the total sample of Nespresso AAA_2 (see Tables 3.1 and 5.1).

[70] Data is presented in COP, not only to avoid the interference of macroeconomic variables in the conversion process, but also because producers are paid in COP for their coffee. Between 2008 and 2011 1 USD = ± 2,000 COP, during 2015 the exchange rate is equivalent to 1 USD = ± 3,000 COP. As such the poverty line income varied from USD 2.1 per person per day in 2011 to USD 1.4 per person per day in 2015.

there is not a dynamic labour market to procure a less precarious source of income. The fact is that, for those smallholders without the possibility to modify their scale-constrains to increase their incomes and savings to finance their sustainability requirements, the market transformation promoted by the sustainable production could contribute marginally to develop their capacity of accumulation and economic growth. Like most of the government´s programmes in developing countries set up to promote productive development and income generation for the smallest farmers living in survival units, VSS initiatives only constitute an economic activity without the potential to become a structural solution to take farmers out from the subsistence agriculture, reduce their vulnerability or assure their incorporation to formal employment needed to increase the family income above the poverty line (Martínez and Sánchez 2013, USAID 2013).

As such, it is necessary to consider several strategic production alternatives by typology of farmers to improve their income and guarantee their economic sustainability. As argued by Ruben (2014), based on Timmer and Akkus (2013), in order to alleviate poverty and high inequality of smallholders living in rural areas of developing countries, a structural transformation of the entire economy is required to ensure formal employment and social incorporation overtime (Martínez and Sánchez 2013). This implies an integrated process of development and agricultural transformation (Timmer 1998), in which government institutions and the private sector develop a coordinated strategy to design the instruments needed to assist inviable farmers to leave the agriculture sector while simultaneously facilitate the scaling-up and intensification of the remaining small and medium farm production (Ruben 2014). [71]

Unfortunately, however, like other Latin American countries, the public policy hitherto implemented by the Colombian government over the last four decades has not succeeded in promoting a structural change, the agricultural sector in particular and the overall economy in general. The combined effect of policy bias against rural economic activities and rural development (Jaramillo 1998, de Ferranti, Perry et al. 2005), which includes the under provision of public goods in rural areas, plus 50 years of ongoing civil

[71] For those smallholders whose efforts make impossible to reach a decent income from an agricultural standpoint, this strategy demands not only boundless access to training programmes to promote the creation of knowledge and technological capacity to facilitate their incorporation to different sectors of the economy but also the provision of basic social services and social protection (health, pensions, water, nutrition, and education to create knowledge and innovation), in particular for those who would not be able to enter into the formal economy (Timmer 1998, Martínez and Sánchez 2013). For the second group of producers, who are viable economically based on agricultural production, efforts are needed toward their professionalization by increasing their access to processes of skills upgrading and capacity building in key areas of their value chain (World Bank 2007, ECLAC 2008, Fernández-Stark, Bamber et al. 2014). Additionally, coordinated public and private efforts are needed to improve their access to markets, training and finance needed to benefit different typologies of producers to provide vital public goods like technical assistance, credit and subsided loans, technical and administrative support, market research, and organisational skills (World Bank 2007).

strife (DNP 2014), added to the unsuccessful export performance relying mostly upon oil, coal and coffee trade, and a limited, inconsistent and uncoordinated strategy to support new leading sectors and specific industries in the rest of the economy, among other factors, have contributed to increase the structural heterogeneity across sectors of the economy.

As a result, despite an important progress in reducing poverty in rural areas in Colombia (OECD 2015), still hundreds of thousands of the poorest farmers are living in rural areas without the possibility of market incorporation in new productive sectors or access to non-farm rural employment and other types of income from agricultural activities. Therefore, as will mentioned in Chapter 6, the options of last resort for the smallest farmers are those related to low-productivity services and the subsistence agriculture associated to activities that do not provide them the possibility to overcome the problems associated with being poor or small through the agricultural production.

This chapter also addressed horizontal concerns in GVC analysis to inquire whether the adoption of specific upgrading strategies to comply with the competitive requirements of two VSS, succeeded in their goal of improving key livelihood-related variables related to dependence of coffee, income diversification with cash crops other than coffee, food security, accumulation of capital through availability of farm and household assets, and working conditions at farm level. Finally, a set of variables regarding households and farm perceptions were tested in those producers participating in two VSS activities, see Table 7.8.

In this sense, what emerged is that coffee producers have a very deep dependency on coffee as the primary source of cash income at household level due to the reduction in cash crops other than coffee, and almost no access to non-farm rural employment as a result of the precariousness of the labour market and the absence of structural growth in the non-agrarian economy – both on treated and non-treated producers. However, there were some contrasting differences between certifications. The comparison between Nespresso AAA_1 and AAA_2 producers, and between Nespresso producers and the control group, showed no differences in differences in the degree of dependence on income from coffee. Contrastingly, participation in the Fairtrade certification increased dependence on coffee compared to conventional producers. On average of the three surveys, the proportion of income generated from coffee was 86% and 70% for Fairtrade farmers and non-certified producers respectively.

Coffee producers are becoming more specialized in coffee as they dedicate more areas of their farms to coffee, and whatever areas that are not used for coffee are exclusively associated with food security. There has been little diversification into other cash crops that could help balance this dependence on coffee. For example, referring to the coffee

growers' efforts to produce food staples to increase their levels of food security, evidence revealed that there were not significant differences-in-difference between certified and non-certified farms. In this sense, on average between 90% and 99% of both certified and conventional farmers indicated that they produced crops for their own consumption.

However, there were differences between treated and non-treated producers with wild fluctuations from year to year in terms of the proportion of producers that grow cash crops other than coffee (i.e. plantain, maize, beans, tomatoes, yucca, etc). For example, the quantitative research showed that the involvement in Fairtrade has statistically significantly lowered the levels of crop diversification compared with non-certified farmers. On average of the three surveys, the proportion of farmers growing cash crops were 27% and 66% for Fairtrade and non-certified producers respectively. The implications of these findings are worrying given the fact that by concentrating their activities on a single source of income, without ensuring income diversification or cash income coming from access to non-farm production activities and wage labour, producers not only fail to spread risks and become more vulnerable to market fluctuations, adverse weather, poor harvests, and are less resilient to external shocks, but also reduce their possibilities to finance input purchase or longer-term capital investments (Plaisier 2014).

In terms of the accumulation of assets, there was a positive significant difference-in-difference which indicated that the involvement in Fairtrade and Nespresso AAA_2 brought, over time, increases in the number of household and farm assets respectively. Regarding the question of whether workers benefit from labouring in certified farms, what emerged from the data is that, while involvement in the Nespresso certification positively influenced the access of workers to free training, involvement in Fairtrade implied that workers received a significantly higher proportion of protective gear compared to control workers.

With regard to changes in socioeconomic and market risk perceptions, what came forth into view is that certified Fairtrade producers are more optimistic than Nespressso AAA producers. But overall, the study found that certified farmers had more positive and optimistic perceptions of the change to their living conditions in comparison to the control group. This perspective was also perceived during the focus groups and interviews to farmers.

Changes in the ratio between the price paid to coffee growers and the retail price were analysed as a way of verifying if the VSS studied in this thesis compared to the Colombian coffee contribute to a redistribution of the value added in the coffee GVC toward producers. At a glance, what emerges from the data is that certified producers have

been receiving higher farm-gate prices compared to conventional producers. However, the proportion of the retail price accruing to farmers who invest in the certifications is less than expected. As was also tested by Daviron and Ponte (2005) and Rueda and Lambin (2013) in the coffee sector and Ruben (2014) in the cocoa sector, for this exercise, the value added initiatives studied in this work do not promote differential redistributive outcomes from the roasters and retailers to the producers. Interestingly, coffee producers of conventional coffees received a higher proportion of the retail prices. Therefore, high value coffees are a better business for roasters and retailers, as a higher proportion of the retail price is captured at this node of the value chain.

This could be a contested outcome, as some scholars, however, have emphasized that the concept of using the producer's value share of the retail product in the GVC analysis is not useful (Lewin, Giovannucci et al. 2004, Gilbert 2008). They argue that new and increased value is being added to the products in the consuming countries through processing, marketing and transformation at the retail level. In this same sense, Daviron and Ponte (2005) mentioned that certain brands and distributors have the ability to capture the majority of the added value of coffee through the control of symbolic or abstract aspects of production, such as services or the atmosphere in coffee shops. This includes, for example, flavouring, mixing in milk products and providing a specific consumption ambiance (Ponte and Kawuma 2003).

CHAPTER EIGHT
Conclusions

This thesis provides new empirical evidence to improve our understanding on whether the compliance with the competitive requirements of Fairtrade and the Nespresso AAA Sustainable Quality programme impacts the upgrading opportunities of coffee growers, and to understand whether these initiatives fulfil their original objective, that of improving the welfare and livelihoods of participating producers. As these queries are addressed, special attention is paid to the differences between larger and smaller coffee growers, in particular, smallholders below one hectare in size.

This thesis used the Global Value Chain (GVC) perspective, including recent contributions in which vertical and horizontal dimension of GVC analysis were integrated to assess the implications for coffee growers of participating in the specialty coffee value chain (Bolwig, Gibbon et al. 2009, Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010).

The data to address these issues comes from three rounds of field surveys, carried out in two coffee regions of Colombia, gathering information from the harvest seasons of 2008, 2009 and 2011, as well as two periods of field work. The sample is a group of 127 Fairtrade producers, two groups of Nepresso AAA producers (92 farmers labelled as Nespresso AAA_1 and 189 labelled as Nespresso AAA_2), and a comparable control sample of similar conventional producers, whose coffee is sold to the external market (152 farmers as control group for Fairtrade and 210 as a control of Nespresso AAA_1).

This thesis combines impact evaluation techniques to construct statistical comparison groups. Propensity Score Matching (PSM) was implemented in combination with the Difference in Difference approach (DID). The main purpose of these methods is to construct a credible and robust counterfactual to correct all the potential selection bias that account for differences between treated and non-treated producers, to “be sure that causality runs from the certifications to the outcome or impact” (Blackman and Rivera 2010: p. 18).

Until now there is limited empirical evidence to understand whether implementing VSS can be viewed as a tool to enhance upgrading trajectories in the specialty coffee value chain. Little attention has been paid to the role that public and private sector support can play in facilitating upgrading strategies in coffee growers who are participating in this value chain. Likewise, there are few systematic studies over several harvest seasons at regular intervals, nor rigorous impact evaluation methods to address whether VSS have affected the investments and adoption of GAPs needed to improve upgrading trajectories at farm level. Finally, there is a need to inquire whether the adoption of

specific upgrading strategies, in compliance with the competitive requirements of these two VSS, provides a favourable economic opportunity for coffee growers, not only in terms of increased cash incomes and profitability or the distribution of wealth towards a higher share of the revenues from the value chain, but also in the evolution of important livelihood-related variables.

This thesis is one of the first academic studies on the impact of the participation of coffee growers in VSS in Colombia.[72] Most of the research found has focused on a relatively limited number of countries like Nicaragua, Peru or Uganda, countries that do not have institutions, regulatory frameworks and marketing regimes similar to those in Colombia. Colombia is not only one of the main producers of speciality and sustainable coffee, and a pioneer in an active strategy of differentiation and marketing using regional identities, but also has strong coffee institutions and a significant regulation and public sector support facilitating upgrading for conventional or non-certified coffee growers. Moreover, none of the studies reviewed include information on the impact of VSS on the upgrading opportunities of coffee growers, nor the producers' incomes by farm size since all the data they present is an average of the total sample of producers.

This chapter is divided into three sections: the first section deals with the question of the effects of the two certifications under review on the upgrading strategies of coffee growers. The second section looks at how these certification schemes affected the pattern of revenues for producers, and their exposure to risk and vulnerability in the specialty coffee value chain. Finally, the third section explores implications for further research and policies aimed at adding value.

8.1 Does the participation in Fairtrade and Nespresso AAA affect coffee growers' upgrading strategies?

The thesis proposes a model to ascertain whether the affiliation of coffee producers to Fairtrade and Nespresso AAA, compared with their respective control group of producers, has resulted in differences for a set of 15 matched indicators which shed light on farmers' capacity to innovate in different spheres of economic upgrading in the markets governed by private standards. This model has two development areas that are determinant for producers to build their competences and upgrade: (i) Institutional support needed to overcome key important constrains that limited farmers' ability to meet the competitive requirements imposed by voluntary sustainability standards; and ii) investments and adoption of good agricultural practices to improve upgrading trajectories.

[72] Also see García *et al.* (2014).

The general picture that emerged from this research is one where the impacts of the institutional interventions to facilitate upgrading, and the investments and adoption of GAP to support the involvement of coffee growers in VSS, are not permanent or consistent over time for most of the 15 indicators analysed. In most of the comparisons, certified farmers witnessed significant statistical differences during at least one of the three annual surveys, but at the endline these differences had decreased or even disappeared. As a result, significant difference-in-difference overtime were observed only for a few variables. Therefore, the potential of the programmes' impact either to capture public and private support to mobilize financial and human resources for upgrading or to accelerate investments and adoption of GAP has not yet been materialized or it is not significantly different over time compared to the groups of non-certified producers.

In essence, for long cycle crops such as coffee, it is clear that the potential to generate significant changes and differences in certified producers as opposed to conventional producers, can take, not only more time, but also calls for greater collaboration and coordination efforts among institutional structures, local organizations and private buyers to leverage resources and assist producers to close gaps quickly and achieve product, process and volume (yield) upgrading and meet the competitive requirements of VSS.

From this evidence an important question arises: is there a coherent strategy among downstream actors behind the provision of public goods and support services to facilitate upgrading and allow producers to participate competitively in the specialty coffee value chain, both certified and conventional? In this sense, the quantitative and qualitative information did not reveal the existence of clear strategies between VSS initiatives or support institutions when it comes to intervention in different territories or typologies of farmers. The fact that there were no clear differences in the composition of training or access to credit facilities between any of the certification groups and their control groups, indicates that the emphasis among initiatives does not vary significantly. In this regard, interviews also revealed that the support services provided by chain stakeholders such as exporters, government and aid agencies, among others, are not coordinated or consistent over time, which implies duplication of efforts and waste of time and resources needed to improve farmers upgrading trajectories.

Table 8.1 presents a summary of the statistical results for each one of the indicators of the two areas of development mentioned above. The "greater than" sign shows that there are statistically significant differences in favour of the treated group for that specific year. The "less than" sign shows that there are statistically significant differences in favour of the control group for that specific year. Meanwhile, the plus sing (+) means that the involvement in the certification positively influenced a significant difference-in-

difference over time and the minus sign (–) the contrary, an empty space implies no effect.

In relation to the first area of development proposed, that of institutional arrangements to facilitate upgrading strategies, the quantitative data revealed that the participation in the Nespresso AAA_1 certification affected significantly, and positively, in only two of the seven indicators proposed to test institutional support to coffee growers. Positive significant differences in differences were observed for the levels of aid in kind and the hours of training received. In addition, the comparison of the two strands of Nespresso, did not reveal positive differences in differences. Meanwhile, for Fairtrade, significant and positive differences in differences estimates were observed only in relation to access to technical assistance on fertilisation.

Table 8.1 Summary of changes in assistance and investments to upgrade[73]

Development area	Indicator*	AAA_1 vs Ctrol				Fairtrade vs Ctrol				AAA_2 vs AAA_1		
		2008	2009	2011	Diff	2008	2009	2011	Diff	2009	2011	Diff
Institutional arrangements to facilitate upgrading	% of producers that have credit		>			>	>	>			>	
	% of producers who received subsidies and/or cash transfers				-		<	<		<		
	% of producers who received aid in kind			>	+		>	>		>		
	Average hours of training in GAP per year		<	>	+	>	>	>	-	>		-
	% of producers who were trained to improve the quality of coffee	>	>	>		>	>	>		>	>	
	% of producers that participated from coffee tasting trials	>				>	>	>	-	>		
	% of producers who fertilize under technical recomendation		>			>	>	>	+	>	>	
Investments and adoption of GAP to improve upgrading trajectories.	% of producers with milling (de-pulping) machine		>	>		>	>		-			
	% of producers employing cover floor or parabolic dry to sun-dry coffee				-	>	>	>	-	>	>	
	% of harvest sold as dry parchment											
	% of renovated trees											
	% of farms with rust-resistant varieties					<	<	<				
	% of farmers who perform soil analysis					>	>	>	-	>	>	+
	Synthetic fertilizers applied (kg/ha)	>				>	>	>	+		>	+
	% of producers that keep records		>	>	+	>	>	>		>	>	+

*Results from matched difference-in-difference estimation

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011 and following Hoebink et al. (2014)

Interestingly, the affiliation of farmers to certifications negatively influenced the performance of some variables compared to the control groups. For example, the involvement in the Nespresso AAA_1 certification, negatively influenced access to subsidies and/or cash transfers, while participation in Fairtrade negatively affected, over

[73] It is important to remember that for most of the comparisons, the differences for the certified producers during the first and third year did not always exceed the difference for the control group during the first and third year, which is a necessary condition to infer impact of the intervention related to the treatment (Khandker, Koolwal et al. 2010, Bennet, Giovannucci et al. 2013).

time, the hours of training received and their participation in coffee tasting trials. Likewise, involvement in Nespresso AAA_2 negatively affected the hours of training in GAP, as the quantitative data detected a negative significant difference-in-difference between the two groups of producers.

Regarding the second development area, that of investments and adoption of good agricultural practices to improve upgrading trajectories, there was no clear trend for the 8 indicators or criteria tested to inquire whether there were differences between certified and non-certified producers for improving upgrading trajectories at farm level, with the sole exception of Nespresso AAA_2.

In terms of the variables to test changes in the levels of investments in milling infrastructure associated to the participation of producers, in Nespresso AAA_1, no significant differences-in-differences were observed, although positive significant difference-in-difference were detected in the proportion of producers keeping records. Meanwhile, the affiliation of farmers to Fairtrade negatively influenced the access to milling infrastructure. However, the quantitative data revealed that the participation in Fairtrade affected significantly, and positively, the amount of synthetic fertiliser applied to the soil.

Remarkably, the comparison between the two strands of Nespresso data revealed that, overtime, a significant higher share of AAA_2 producers invested in soil analysis and applied on average a statistically higher amount of synthetic fertilizers by the endline, added to the fact that a higher share of producers adopted GAP and record keeping. This is a very interesting finding, that shows that the upgrading trajectories between two groups of producers selling coffee to the same initiative not only could differ but also that these differences could have important repercussions in key economic measures such as gross revenues, yield per hectare, production cost and, more importantly, in the gross margins (revenues minus cost) as was shown in chapter 7. The circumstances that motivated this steeper learning curve of GAP by Nespresso AAA_2 producers cannot be determined on the basis of the data contained in the surveys, nor the interviews conducted during fieldwork, and should be subject of further research.

There are two likely and interconnected explanations for the lack/scarcity of positive impacts in the upgrading trajectories as a result of participation in Fairtrade and Nespresso AAA_1: (i) the fact that conventional producers, operating as a control group, have been also participating from the policy measures implemented by Colombian coffee authorities, with the support of national government and industry organizations, focusing on yield improvement and sustainable cultivation, and regaining Colombia´s position as the second largest producing country (section 5.3 describes these measures), and (ii) the budget allocated by donors to support farmers‘ upgrading trajectories,

included those inputs leveraged from different stakeholders, are still very modest to assure the durability of impacts and make a difference due to the growth in total number of coffee growers participating in VSS and the precariousness of the economic situation of most of them.

Regarding the first explanation, the support from coffee institutions that also covered non-certified producers could explain a lot of findings. This confirms the argument that the regulatory structure of the country (Ponte 2008, Neilson and Pritchard 2009) or the richness of the local institutional environment (Humphrey 2008) affects the dynamics of value chain participation and the upgrading trajectories of the coffee growers. The fact that non-certified producers were also benefiting from a range of institutional support programmes (such as extension services, strategic investments, plant breeding programmes, pest and diseases management strategies, among other activates), could mask the benefits of certification[74]. As such, at least for the two groups of producers analysed in Colombia, it is not possible to state that certifications have no, or very limited, positive effects in participating farmers. It can be argued, instead, that positive benefits from certification were matched by positive benefits that were also available to non-certified farmers. It is possible that similar research in a country where there were no parallel institutional initiatives for non-certified farmers, positive results from certification might be stronger. However, although, there are no impact evaluations on the effect of institutional interventions on upgrading strategies to support this argument, without any doubt the role of government and coffee institutions to support conventional producers has been determinant to offset the effect of VSS in Colombia.

Concerning the second explanation, some authors have mentioned that participation in VSS may lead to upgrading opportunities (Lee, Gereffi et al. 2012), in particular in value chains where coordination between roaster, traders and farmers tends to be stronger (Muradian and Pelupessy 2005), such as the sustainable quality programme from Nespresso or Fairtrade. However, it has been pointed out that the growing number of producers (and the total volume of coffee) that actually participate in these commercialization channels is the main limitation for further upgrading as the private and public inputs aimed at supporting producers and enhancing their upgrading capabilities have been fairly marginal to make a change (Muradian and Pelupessy 2005). It is a key consideration for the Colombian coffee sector, as the substantial growth rates of affiliation to VSS experienced in the last few years (see Figure 5.11) has increased the demands not only for financial and technical assistance to adjust production systems, but also for aid in kind for access to proper post-harvest processing facilities. In a context

[74] It is important to remember that each coffee grower in Colombia pays a “contribution” of between 4% and 6% for each pound sailed, depending on the level of the Colombian FOB sale price. This money is used by the FoNC to fulfil its duties of providing both essential public goods and services, as well as to perform its role as a buyer of last resort (please see section 5.3 Institutions and Regulatory framework).

of lack of coordination among different stakeholders to assign their cash and in kind support, of a widespread feeling that the roasters and traders' contribution is very modest compared to their returns, and of declining farmer's incomes due to the drop in Colombia's harvest, it is possible that the rising production costs from certified production and the erosion of the price premiums, might have reduced the producers´ incentives to innovate in the different spheres of upgrading.

Another contribution of this thesis is the analysis by farm size of the impact of VSS participation in the upgrading strategies of the coffee growers, which reveal that small scale farmers below one hectare,[75] both treated and not-treated, are at a disadvantage compared to large scale certified farmers above five hectares, both in terms of access to institutional arrangements to facilitate upgrading (for example access to credit, aid in kind and training) and investments (post-harvesting infrastructure) and adoption of GAP to improve upgrading trajectories. In this sense, the outcomes of the analysis for the set of 15 matched indicators by farm size were not encouraging and draw a bleak picture for smallholders (see Table 6.7). In most of the comparisons, smaller producers below one hectare, particularly those who are not certified, faced the highest number of restrictions and limitations.

Evidence, therefore, pointed out that small farmers do not mobilise the same level of resources that certification schemes appear to mobilise to support the involvement of larger certified farmers. A trend that was corroborated during field work interviews and focus groups with key stakeholders of the coffee chain in Colombia, in the sense that high yielding, bigger, more trained and capable farmers were on average chosen for the certified programmes. This finding was also corroborated by farmers affiliated to UTZ Certified in Colombia (García, García et al. 2014) and by Ruben (2014, p 42) who pointed out that VSS "are not necessarily inclusive" for too small farmers.

In terms of the conventional producers, at some point, this situation could be seen as a source of exclusion that contributes to their further marginalization with a view to certification. This is an important fact, as it raises questions about the sustainability of those schemes that are promoting the adoption of the competitive requirements of VSS among smallholders who face deeper structural constrains that influences limited the potential of certified production to fulfil basic needs and achieve a sustainable livelihood (Ruben 2014). In particular, those farmers who live in survival units and do not have the capacities, the incentives and support to implement upgrading strategies and participate in the market of certified coffees.

[75] As was showed in Table 3.3, is key to have in mind that in Colombia 30% of the coffee growers are living in farms below one hectare in size. Meanwhile, coffee farmers with less than one hectare farms represent 42% of the total sample of Nespresso AAA_1; 8% of the total farmers of the sample of Fairtrade, and 26% of the total sample of Nespresso AAA_2.

As will show in the next section, not all of the producers can take advantage of VSS programmes. Even if producers improve their upgrading trajectories, the impossibility to modify their scale-constraints makes impossible to generate sustainable income over time. As has been pointed by Ruben (2014, p. 42) in many cases the size of the farm is "too small to provide a decent income in the long run". Under these circumstances, producing and selling sustainable coffee is a subsistence economic activity without the potential to become a structural solution to take farmers out from the subsistence agriculture and assure outcomes in livelihood activities related to poverty reduction, improving of employment conditions, food security, risk and vulnerability, among others.

8.2 How Fairtrade and Nespresso, affected the pattern of revenues for producers, and their exposure to risk and vulnerability in the specialty coffee value chain?

This thesis integrates horizontal concerns in GVC analysis to quantitatively assess whether farmers adhered to Fairtrade and Nespresso AAA benefited, not only in terms of increased cash incomes and profitability, but also by improving key livelihood-related variables.

There has been little agreement on how the outcomes generated by the adoption of selected voluntary sustainability standards (VSS) impact the welfare and livelihoods of coffee producers, particularly smallholders. Additionally, and specifically in the coffee sector, several researchers agree that there is an increasing need for effective impact evaluation, outcomes and possibilities of these initiatives over time (Blackman and Rivera 2010, Von Hagen and Alvarez 2011, Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012, Hoebink, Ruben et al. 2014, Ruben 2014).

Therefore, to answer the question proposed in the title of this section, the analysis is broken into four sub-sections: (i) the empirical analysis of core economic measures including the gross margins per hectare (revenues minus cost) and key variables related to prices, wages and labour; (ii) addressing horizontal concerns in GVC analysis to inquire whether the adoption of specific upgrading strategies to comply with the competitive requirements of two VSS resulted in changes in variables related to working conditions, salaries, income diversification, food security, dependency from coffee, gain and/or loss of household and farm assets, job security, worker participation, among others. Additionally, the study includes changes in household perceptions; (iii) analysis of the household income by farm size (small, medium and large); and (iv) the distribution of income and margins between different segments of the coffee global value chain.

In this sense, regarding the first sub-section, the analysis revealed that those farmers participating in Fairtrade and Nespresso AAA_1 did not strengthen their economic conditions compared to similar non-certified farmers, as over time no statistical differences were reported for the gross margins per hectare (gross revenues minus cost). This a result of a significant higher production cost that offset significant higher revenues per hectare, see Table 8.2. Evidence also pointed out that the involvement in Fairtrade and Nespresso AAA_1 did not result in statistically significant higher farm gate prices or higher productivity than conventional producers, as the analysis did not detect significant difference-in-difference over time between the two groups.

About this regard, recent cross-country surveys employing rigorous impact studies involving at least two rounds of surveys to assess differences over time have reached similar conclusions (Fort and Ruben 2008, Blackman and Rivera 2010, Beuchelt and Zeller 2011, Ruben and Fort 2012, Hoebink, Ruben et al. 2014). Their results signalled that the involvement in Fairtrade leads to "modest and fairly limited" increases in farmers' total gross margin (Hoebink, Ruben et al. 2014: p. 8). Other comparison studies indicate that, although there is greater productivity and better prices in farms producing coffee with the Fairtrade label, these differences are not large enough to generate a clear effect in the gross margins (Fort and Ruben 2008, Beuchelt and Zeller 2011, Ruben 2014). In this sense, Arnould et al. (2009: p. 199) indicate that in economic terms "Fairtrade is not a panacea for the third-world poverty" (Arnould, Plastina et al. 2009).

In the particular case of the Nespresso AAA Sustainable Quality programme, the few available evidence revealed that AAA producers received a higher net income per produced unit (US cents/kg) overtime and exhibited higher levels of performance compared to control farmers in indexes for social, environmental and economic conditions (CRECE 2013, García, Ochoa et al. 2013c). However, there is no systematic analysis of value chain available, or studies about its effects relating to the impact on living conditions and farmers' livelihoods overtime.

Table 8.2 Summary of changes in economic conditions and key livelihood variables

	Indicator*	AAA_1 vs Ctrol				Fairtrade vs Ctrol				AAA_2 vs AAA_1		
		2008	2009	2011	Diff	2008	2009	2011	Diff	2009	2011	Diff
Changes in economic conditions	Gross revenue (Thousand COP[§]/ha)	>	>	>		>	>	>	+		>	+
	Cost - (Thousand COP/ha)	>	>	>		>	>	>	+	>		
	Gross margin[£] (Thousand COP/ha)	>	>			>	>				>	+
	Average farm gate price (Thousand COP/@[§§])	>	>	>		>	>	>		<		+
	Yield of dry parchment coffee (@/ha)	>	>		-	>	>	>			>	+
	% paid labor	>	>			>			-			
	Wage per day (Thousand COP per day)		>					>	+	>	>	
Changes in key livelihood related variables	% of family income coming from coffee	>				>	>	>	+			
	% of farms with food crops					>						
	% of farms with cash crops	>		>		<	<	<	-			
	Average number of assets at the household (1 to 9)	>	>	>		>	>	>	+			
	Average number of assets at the farm (1 to 15)					>	>	>			>	+
	% of producers who offer free training			>	+		>	<	-	>	>	+
	% of farms that provide protective gear			<	-	>	>	>	+		>	
	% or producers who reported cost increases	>			+		>	<	-			
	% or producers who reported coffee price drops	>	>			>	>	<	-	>		-
	Perception about changes in the level of income			>			>	>	+			
	Perception about changes in household economics		<	>	+	>	>	>	+	>	<	-
	Perception about changes in household quality of life	>	<	>		>		>	+	>		
	Perception about changes in the health of the family			>	+			>	+	>		

*Results from matched difference-in-difference estimation; [§]1 USD = ± 2,000 COP; [£] gross margin=(revenue minus cost); [¤]@=12.5 kg

Source: Author's own calculations based on CRECE's surveys from 2008, 2009 and 2011 based on Hoebink et al. (2014)

Worryingly, the surveys data also showed that VSS do not assure good jobs as the informality in the coffee labour market has grown. Quantitative data revealed that coffee growers have been compensating their lack of resources to cover the increasing cost of production – both certified and conventional - not only by systematically decreasing the share of paid labour, but also paying a fraction of the minimum legal wage established by the government. This outcome challenges previous works that argued that certifications such as Fairtrade had positive impacts on labour conditions, and those studies that found that involvement in Fairtrade had positive effects on net incomes, as well as yield and prices (Nelson and Pound 2009, Raynolds 2009).

The main conclusion that can be drawn from all these outcomes is that it is a critical situation for those producers who have viewed differentiated coffee with VSS as a potential tool to achieve economic sustainability, reduce poverty and improve their livelihoods. In this sense, some authors have warned about the commoditisation or mainstreaming of the specialty and sustainable coffee market (Daviron and Ponte 2005, Giovannucci and Ponte 2005, Raynolds 2009), in particular, if rewards accruing to farmers investing in the certifications requirements are less than expected (Lewin *et al*., 2004; Muradian and Pelupessy, 2005), and do not assure profits for the growers (Brando 2012). More recently, and based on quantitative data, Ruben (2014, p. 41) pointed out that the impact of VSS in addressing poverty and livelihoods is limited and "should not

be overestimated" as certified production cannot be the only tool to boost producers´ socioeconomic status (PCS 2015).

Based on the aforementioned results, the question of how sustainable these standards actually are is pertinent. All the producers expect significant price premiums as well as significant gross margins, not only as fair compensation to offset the higher production costs and efforts of meeting the competitive requirements of VSS (Potts, Fernandez et al. 2007), but also as a measure of impact of economic sustainability (Daviron and Ponte 2005). In light of this, when there is no correlation between the price and the recognition of a producer's sustainable practices (Ruben and Fort 2012), as most of the farmers interviewed complained about during field work, it becomes more difficult for a producer to justify the costs of sustainability (Giovannucci 2008) and strengthen the credibility of VSS (Ruben 2014).

Contrarily, other authors have pointed out that it is prudent to de-emphasise price premiums as a reason for entering these markets since these premiums could eventually diminish (Lewin, Giovannucci et al. 2004). For some analysts, the main arguments for those who promote these programmes must go beyond higher prices for coffee growers (Ponte and Kawuma 2003) as there are hidden benefits associated with the adoption of the competitive requirements imposed by the standards and certifications' systems (Brando 2012). In this sense, although participation in VSS not necessarily assure a better economic performance or social well-being of producers (Muradian and Pelupessy 2005, Lebel 2012), these initiatives can facilitate (catalyse) upgrading strategies (Lee, Gereffi et al. 2012) and help farmers to earn more money through gains in efficiency, improved crop quality, increase in production and controlling farm costs in the medium and the long term. Notwithstanding as was shown in Chapter 6, with the exception of those producers labelled as Nespresso AAA_2, value chain participation in Fairtrade or Nespresso AAA_1 do not necessarily lead to differences-in-differences against conventional producers neither adopting upgrading strategies needed to increase their returns nor the level of institutional assistance to participate in these chains.

In this sense, this thesis revealed that AAA_2 producers obtained higher gross margins over time compared to AAA_1 producers, Table 8.2. The study also found significant differences over time in farm gate prices and production of coffee (yield per hectare) and, related to this, significant differences in differences that show that the involvement in Nespresso AAA_2 brought higher revenues compared to Nespresso AAA_1. Interestingly, the comparison revealed that the involvement in AAA_2 did not imply a significant difference overtime in the production cost.

This improved performance can be explained with data in Tables 8.1 or 6.6, in which the involvement in AAA_2 positively increased the adoption of key agricultural practices to

improve upgrading trajectories. The circumstances that motivated this steeper learning curve in GAP by Nespresso AAA_2 producers cannot be determined on the basis of the data contained in the surveys, nor the interviews conducted during fieldwork, and should be subject of further research.

In terms of the second subsection, the main aim was to integrate horizontal concerns into the value-chain framework through the analysis of the impact of the adoption of two VSS on key livelihood related variables. Therefore, understanding the integration of coffee growers within value chain structures requires more than an analysis of producers' incomes, or changes in income distribution. Rather, it calls for attention to how participation, in particular value chains structures, generates outcomes in livelihood activities related to poverty reduction, improving of employment conditions (i.e. job security and salaries), food security, risk and vulnerability, among other key variables (Bolwig, Ponte et al. 2010, Riisgaard, Bolwig et al. 2010).

In this sense, what emerges is that coffee producers have a very deep dependency on coffee as the primary source of cash income at household level, due to the reduction in cash crops other than coffee, and almost no access to non-farm rural employment as a result of the precariousness of the labour market and the absence of structural growth in the non-agrarian economy – both on treated and non-treated producers. Coffee producers are becoming more specialized in coffee as they dedicate more areas of their farms to coffee, and whatever areas not used for coffee are exclusively associated with food security. There has been little diversification into other cash crops that could help balance this dependence on coffee. The implications of these findings are worrying given the fact that by concentrating their activities on a single source of income, without ensuring income diversification or cash income coming from access to non-farm production activities and wage labour, producers not only fail to spread risks and become more vulnerable to market fluctuations, adverse weather and are less resilient to external shocks, but also reduce their possibilities to finance input purchase or longer-term capital investments (Plaisier 2014).

However, there were some differences between certifications. For example, participation in the Fairtrade certification increased dependence on coffee compared to conventional producers. On average of the three surveys, the proportion of income generated from coffee was 86% for Fairtrade farmers and 70% for non-certified producers. Meanwhile, the comparison between Nespresso AAA_1 and AAA_2 producers, and between Nespresso producers and the control group, showed no differences in differences in the degree of dependence on income from coffee. Simultaneously, over time the involvement in Fairtrade negatively affected the percentage of farmers with cash crops.

In terms of the accumulation of assets, there was a positive significant difference-in-difference which indicated that the involvement in Fairtrade and Nespresso AAA_2 brought, over time, increases in the number of household and farm assets respectively. Regarding the question of whether workers benefit from labouring in certified farms, what emerged from the data is that, while involvement in the Nespresso certification positively influenced the access of workers to free training, involvement in Fairtrade implied that workers received a significantly higher proportion of protective gear compared to control workers.

With regard to changes in socioeconomic and market risk perceptions, what emerged at a glance is that certified Fairtrade producers are more optimistic than Nespressso AAA producers. But overall, the study found that certified farmers had more positive and optimistic perceptions of the change to their living conditions in comparison to the control group. This perspective was also perceived during the focus groups and interviews to farmers.

In terms of the third sub-section, the analysis of changes in the household income by farm size, at least three important findings related to the conditions of small famers should be highlighted: (i) the size of the coffee plots is too small to generate a level of income from coffee production high enough to secure a sustainable livelihood, fulfil basic needs and reduce poverty; (ii) farmers are extremely dependent on coffee, since local economies do not offer opportunities for opting out of coffee production, and there are no alternatives of incorporation in other formal markets of the primary sector or other growing sectors out from the agrarian economy; (iii) gross margins from coffee have been obtained at the expense of reducing the share of paid labour, and increasing the under-employment and informality in the labour market.

The precarious conditions of smallholders located in farms below one hectare becomes more evident after contrasting the per capita monthly household income of certified producers, with the monthly household income per capita needed to reach the poverty line or the extreme poverty line. In this sense, the total income is still below the extreme poverty line of COP 4,200 per person per day.[76] The picture that emerges for medium and large size farms is more promising, since there is more room for diversification with cash crops and yield increases.

These findings open a great debate: Can VSS pull small scale producers out of a situation of poverty relying on the production of certified coffee? About this regard, this study

[76] Data is presented in COP, not only to avoid the interference of macroeconomic variables in the conversion process, but also because producers are paid in COP for their coffee. Between 2008 and 2011 1 USD = ± 2,000 COP, during 2015 the exchange rate is equivalent to 1 USD = ± 3,000 COP. As such the poverty line income varied from USD 2.1 per person per day in 2011 to USD 1.4 per person per day in 2015.

suggests that the potential impact of certified production on poverty and livelihoods of the small farmers is limited by the simple fact that the reduced size of their farms is a structural factor that limits the potential of certified production (Ruben 2014) and makes it impossible to generate sufficient income to significantly improve their livelihoods and economic sustainability. In light of this, the long-term commercial viability and credibility of VSS should take this reality into account if it wants to continue to claim that its main drive is to enhance the welfare and livelihoods of producers.

The evidence collected signalled that involvement in VSS, as well as the production of conventional coffee, becomes a subsistence alternative of the very small farmers when there is not a dynamic labour market to procure a less precarious source of income. The fact is that, for those smallholders without the possibility to modify their scale-constraints to increase their incomes and savings to finance their sustainability requirements, the market transformation promoted by the sustainable production could contribute marginally to develop their capacity of accumulation and economic growth. Like most of the government´s programmes in developing countries set up to promote productive development and income generation for the smallest farmers living in survival units, these initiatives only constitute an economic activity of last resort without the potential to become a structural solution to take farmers out from the subsistence agriculture, reducer their vulnerability or assure their incorporation to formal employment needed to increase the family income above the poverty line (Martínez and Sánchez 2013, USAID 2013).

As such, it is necessary to consider several strategic production alternatives by typology of farmers to improve their income and guarantee their economic sustainability. As argued by Ruben (2014), based on Timmer and Akkus (2013), in order to alleviate poverty of smallholders in rural areas of developing countries a structural transformation of the entire economy is required to ensure formal employment and social incorporation overtime (Martínez and Sánchez 2013) for agricultural producers. This implies an integrated process of rural development and agricultural transformation (Timmer 1998), in which government institutions and the private sector develop a coordinated strategy to design the instruments needed to assist inviable farmers to leave the agriculture sector and facilitate their incorporation to different sectors of the economy while simultaneously promote the scaling-up and intensification of the remaining small and medium farm production (Ruben 2014).[77]

[77] For those smallholders whose efforts make impossible to reach a decent income from an agricultural standpoint, this strategy demands not only boundless access to training programmes to promote the creation of knowledge and technological capacity to facilitate their incorporation to different sectors of the economy but also the provision of basic social services and social protection (health, pensions, water, nutrition, and education to create knowledge and innovation), in particular for those who would not be able to enter into the formal economy (Timmer 1998, Martínez and Sánchez 2013). For the second group of producers, who are viable economically based on agricultural production, efforts are needed toward

Unfortunately, however, like other Latin American countries, the public policy hitherto implemented by the Colombian government over the last four decades has not succeeded in promoting a structural change in the agricultural sector or the overall economy. The combined effect of policy bias against rural economic activities and rural development (Jaramillo 1998, de Ferranti, Perry et al. 2005), which includes the under provision of public goods in rural areas, plus 50 years of ongoing civil strife (DNP 2014), added to the unsuccessful export performance relying mostly upon oil, coal and coffee trade, and a limited, inconsistent and uncoordinated strategy to support new leading sectors and specific industries in the rest of the economy, among other factors, have contributed to increase the structural heterogeneity across sectors of the economy.

As a result, despite an important progress in reducing poverty in rural areas in Colombia (OECD 2015), still hundreds of thousands of the poorest farmers are living in rural areas without the possibility of market incorporation to formal employment in new productive sectors or access to non-farm rural employment and other types of income from agricultural activities. Therefore, as an option of last resort, low-productivity services and subsistence agriculture become the only sources of income for the poorest or smallest farmers, preventing them from overcoming the problems associated with being poor or small through the agricultural production.

Finally, in terms of the fourth sub-section related to the changes in the ratio between the price paid to coffee growers and the retail price, what emerges from the data is that certified producers have been receiving a comparatively higher farm-gate price compared to conventional producers. However, the proportion of the retail price accruing to farmers who invest in the certifications is less than expected. As such, the value added initiatives studied in this work do not promote differential redistributive outcomes from the roasters and retailers to the producers. Interestingly, coffee producers of conventional coffees received a higher proportion of the retail prices. Therefore, high value coffees seem to be a better business for roasters and retailers, as a higher proportion of the retail price is captured at this node of the value chain.

While this sort of analysis is under criticism, because the amount of coffee contained is barely a fraction of the value added in consuming countries (Lewin, Giovannucci et al. 2004, Gilbert 2008), it is nonetheless a useful way to see variations, by types of coffee, in the percentage of the retail price received by the producer.

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their professionalization by increasing their access to processes of skills upgrading and capacity building in key areas of their value chain (World Bank 2007, ECLAC 2008, Fernández-Stark, Bamber et al. 2014). Additionally, coordinated public and private efforts are needed to improve their access to markets, training and finance needed to benefit different typologies of producers to provide vital public goods like technical assistance, credit and subsided loans technical and administrative support, market research, and organisational skills (World Bank 2007).

8.3 Implications for future research and policies aimed at adding value

Without any doubt, this type of impact analysis for non-perishable crops, like coffee, whose productive cycle in optimal conditions can be up to 15 years, cannot be comprehensibly conducted with three rounds of surveys. Although the three surveys over a period of four years were useful to identify trends, the long productive cycle means the coffee grower is subject to a number of variables over a long period of time, which are not covered by this thesis. As such, in order to have conclusive results on the impact of participation in VSS, this type of analysis should be extended over time to cover the length of the productive cycle. Producers are participating in these initiatives without the certainty of the outcomes and the durability of impacts, therefore evidence is needed to strengthen the credibility of VSS among farmers, local institutions, government and other stakeholders. Against the general belief, economic benefits will not follow automatically upon reaching compliance with the competitive requirements of VSS (Ruben 2014). Thus, for long cycle crops such as coffee, it is clear that the potential to generate significant changes and differences in certified producers as opposed to conventional producers, can take, not only more time, but also calls for greater institutional efforts to build capacities, particularly of smaller producers who face the greatest disadvantages.

Surprisingly, the study revealed that the involvement in Fairtrade and Nespresso does not have significant impact on upgrading trajectories and incomes compared with two groups of similar non-certified farmers during three round of surveys. However, it is very important to note that the only objective difference was found in the comparison of two strands of Nespresso AAA producers (AAA_2 vs AAA_1) which were in two different stages of certification. Quantitative data, during two rounds of surveys and a two-year interval, revealed that the AAA_2 group had a significantly higher adoption of GAP which led to increased margins.

This is a very interesting finding that shows that the upgrading trajectories between two groups of producers selling coffee to the same initiative not only could differ but also that these differences could have important repercussions in key economic measures as was shown in chapter 7. The circumstances that motivated this steeper learning curve of GAP by Nespresso AAA_2 producers cannot be determined on the basis of the data contained in the surveys, nor the interviews conducted during fieldwork, and should be subject of further research.

Finally, the treatment of small coffee growers cannot be limited to the impact of VSS on their welfare and livelihoods. It has to transcend the agricultural perspective into how they can connect with other sectors of the economy to ensure their economic viability. Evidence about very smallholders signalled that, despite important progress in their

upgrading trajectories, doubts arise about its long term economic viability, particularly for the small farmers whose extra cost of meeting the VSS – such as the costs of labour and certification, is not compensated by the expected revenue due to the size of their operations, either after getting improvements in quantity, quality or price premiums (Fulponi 2006, Potts, Opitz et al. 2007).

In this sense, downstream actors in the value chain must come to a decision between maintaining high levels of assistance and use of donor funds to subsidize those producers whose scale of production makes them economically unviable from an agricultural standpoint, or designing complementary measures of market and social incorporation to ensure their access to formal employment needed to alleviate their poverty or increase the family income above the poverty line. As mentioned previously, as a way to increase their credibility, a big step from VSS initiatives would be to recognize that specialty and certified markets cannot be the unique tool to help very small coffee producers to overcome structural constraints faced for decades.

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Appendix 1: The questionnaire survey structure

The questionnaire format used to gather both quantitative and qualitative field data information is composed of four sections that includes basic information and measures along economic, environmental and social parameters. The questionnaire was based on an initial questionnaire designed by the COSA Project and it was reviewed by the COSA's Scientific Committee, the CRECE research team and external stakeholders prior to being applied. The questionnaire seeks to assess both the direct and indirect welfare effects at farm level of the adoption of different speciality coffees compared again to producers of conventional coffee (Giovannucci and Potts 2008). The survey design allows the construction of a set of economic, social and environmental indicators and indices to carry out a cost/benefit analysis that will enable comparisons between conventional and speciality coffees that will allow the hypothesis to be answered at farm level.

Section 1 is focused on permitting the gathering of information on farm household characteristics and composition, farm data about plot size, coffee varieties, farms accessibility, and form or presentation, as the coffee is sold along with basic data about membership on local organisations and basic data regarding the reasons to get the certification.

Section 2 inquired about the economic dimension of the farm household, it is divided into 21 tables in which it assessed production costs, income received by the production of coffee and other non-farm income and off-farm activities, and matters relating to the quality of coffee, access to the coffee market. Finally, the economic dimension includes issues such as the economic impact of sustainable initiatives on agricultural production, yields, prices and profits (gross and net profits margins), household income, capital, wealth, access to credit, certification cost and other issues.

Section 3 is focused on the environmental outcomes of sustainable initiatives. This section contains a total of seven tables designed to measure the farms' environmental status and performance including measures on the use and management of water, energy and soil resources, as well as pollution reduction, recycling, carbon sequestration, the application of agrochemicals and fertilisers and the adoption of environmental-friendly practices.

Finally, section 4 inquired about the key indicators of social sustainability and it is composed of 14 tables that are focused on occupational health and safety, labour rights, effects on community, working hours and wages and producer satisfaction. In addition to this standard, it measures the survey to try to detect other behavioural responses such as the changes in attitudes regarding risk, willingness to invest, strength and the bargaining power of farmers and their organisations.

Formulary No. ☐☐☐☐

CRECE — CENTRO DE ESTUDIOS REGIONALES CAFETEROS Y EMPRESARIALES

Committee On Sustainability Assessment
COLOMBIA
Third Phase- 2011

COSA — SUSTAINABILITY ASSESSMENT

Objective: Study the effects of adopting sustainable practices in the coffee production of certified and uncertified farms

Time of start ☐ AM ☐ PM Day / Month / Year

MODULE A. BASIC INFORMATION

SECTION A. Identification

1. Farm location:
- a. Region _____
- b. Town _____
- c. Village _____
- d. Name of the farm _____
- e. SICA code ☐☐☐☐☐

2. Name of the respondent. _____

2.a. 1. Owner → 1 | 2. Manager → 2 | 3. Leaseholder → 3 | 4. Other → 4

3. Cellphone number ☐☐☐☐☐☐☐☐☐☐

4. Name of the farmer: _____

4.a. 1. Male 1 | 2. Female 2

4.b. ID number: ☐☐☐☐☐☐☐☐☐☐

5. Age of the farmer → ☐☐ Years

5.a. Civil status of the farmer
1. Single → 1
2. Married → 2
3. Cohabiting → 3
4. Divorced → 4
5. Widowed → 5

6. Farmer experience in coffee production *(in this farm and others)*: ☐☐ Years

7. The farm has a house? Yes → 1 | No → 0

7.a. Between 2010 and today, has the farm been abandoned at some point? Yes → 1 | No → 0

8. Number of members of the farmer's household ☐☐ People

9. Land tenure
1. Landowner lives in the farm → 1
2. Tenant farmer → 2
3. Holder → 3
4. Leaseholder → 4
5. Indian reservation → 5
6. Other → 6
Which? _____

SECTION B. Farm information

10. Does this farm have any certification(s) with a seal or a sustainability initiative for the coffee production? Yes → 1 *Skip to 11* | No → 0

10.1 Did you retire? Yes → 1 Why? _____ | No → 0

11. What type of certification(s) does the farm have?
(you can mark multiple options)

Fill in if you answered Yes In 10

		Month	Year
a. Organic	☐	☐☐	☐☐
b. UTZ Certified	☐	☐☐	☐☐
c. FLO	☐	☐☐	☐☐
d. Rainforest Alliance	☐	☐☐	☐☐
e. Nespresso AAA	☐	☐☐	☐☐
f. 4C	☐	☐☐	☐☐
g. CAFE Practices	☐	☐☐	☐☐
h. Other, Which?	☐	☐☐	☐☐

Skip to 13

Fill in if you answered No In 10 → i. "Conventional" → ☐ *Continue*

12. Do you plan to certify the farm?

Yes → 1 → *Expected date* **Month** **Year**

For any response, skip to 15

No → 0 →
1. Doesn't have information → 1
2. Too many requirements → 2
3. is not interested → 3
4. There's no group → 4
5. You think it's expensive → 5
6. Farm or coffee in bad conditions → 6
7. Low volume of Production → 7
8. Other reason → 8

C **13. Who pays of the certification?**
1. Group or association → 1
2. Cooperative → 2
3. Producer → 3
4. Exporter → 4
5. FNC → 5
6. Other, Which? _____ → 6

C

14. Main reasons you decided to get certified.

	Mark the corresponding number
1. To maintain or improve the relations with the community	First
2. To improve the environment	Second
3. To get better prices or improve access to the markets	Third
4. Because my buyer or intermediary requires me to be certified	Fourth
5. To improve farm's management	Fifth
6. To improve coffee's quality	
7. I didn't decide, I was selected	
8. Other,which?	

15. Area and density *(2011)*

a. Total area of the farm ha
a.1. Area in woods *(guadua, bushes, etc)* ha
a.2. Area planted in other crops ha
a.3. Area in grass ha
a.4. Area for other purposes ha
b. Area planted in coffee in 2011 ha
b.1. Area planted with other crops in association with coffee (i.e. Banana, corn, beans, manioc, etc.) ha
c. Area under coffee plantation in 2010 ha
d. Number of trees per hectare
e. Planting distance of the coffee X
f. Number of coffee trees in production

16. What coffee varieties did the farm have in 2011?

a. Caturra %
b. Colombia %
c. Tipica %
d. Borbón %
e. Tabi %
f. Castillo %
g. Catimore (Costa Rica 95) %
h. Other %
Which?

16.A. Did you change any coffee varieties in 2011?

	Former variety	Current variety
Yes 1		
No 0		

17. According to the next age ranges, how many coffee trees have you planted?

	Age	Number of plants
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

18. In what form did you sell your coffee?:

a. Cherry %
b. Wet coffee %
c. Parchment %
d. Low quality %
e. Other %
f. Didn't produce coffee 2011

20. Does the farmer belong to a group or organization of coffee producers?

Yes 1 — Name of the group
No 0

22. What's the distance to the place where you sell your coffee?

	Distance		Travel length	
a.	kms	b.	minutes	
a.1.	Doesn't know	b.1.	Doesn't know	

23. In 2011, you tooks record of...:

	NO	YES		NOTE: If you answered 2 or 3 answer 4	
	1. Estimation of the farmer	2. Part of the information has support	3. All the information has support	4. Have you used this information to make decisions	N/A
a. Fertilizers and agrochemicals	1	2	3	Si 1 / No 0	
b. Labors or activities	1	2	3	Si 1 / No 0	
c. Coffee picking and milling	1	2	3	Si 1 / No 0	
d. Milling outside the farm	1	2	3	Si 1 / No 0	
e. Organic fertilizers	1	2	3	Si 1 / No 0	

MODULE B. ECONOMIC DIMENSION

TABLE 1. Coffee commercialization

a. Who bought your coffee in 2011 N/A ☐ *Didn't have production in 2011*

Buyer	1. Percentage bought	2. initiative (*mark with X*)	3. Percentage
1. Private buyer	☐☐☐,☐☐ %	*Certified* ☐	☐☐☐,☐☐ %
		Conventional ☐	☐☐☐,☐☐ %
		Low quality ☐	☐☐☐,☐☐ %
2. Cooperative	☐☐☐,☐☐ %	*Certified* ☐	☐☐☐,☐☐ %
		Conventional ☐	☐☐☐,☐☐ %
		Low quality ☐	☐☐☐,☐☐ %
3. Association	☐☐☐,☐☐ %	*Certified* ☐	☐☐☐,☐☐ %
		Conventional ☐	☐☐☐,☐☐ %
		Low quality ☐	☐☐☐,☐☐ %
4. Other, which? *(private grinder, roaster , exporter)* _____	☐☐☐,☐☐ %	*Certified* ☐	☐☐☐,☐☐ %
		Conventional ☐	☐☐☐,☐☐ %
		Low quality ☐	☐☐☐,☐☐ %

b. Who bought your coffee in 2010 N/A ☐ *Didn't have production in 2010*

1. Private buyer ☐☐☐,☐☐ %
2. Cooperative ☐☐☐,☐☐ %
3. Association ☐☐☐,☐☐ %
4. Other, *(private grinder, roaster, exporter)* ☐☐☐,☐☐ % Which?_____

TABLE 2. Input costs

a. Did you apply fertilizers? 1 Yes 0 No

b. Did you apply agrochemicals? 1 Yes 0 No

NOTE: *All the information of the survey is about 2011*

a. Fertilization

	Fertilizer *(N/P/K-Mg/S components- or commercial name)*	N. Natural S. Synthetic	Total amount applied	Unit (kg = Kilos, bts = Package, lts = Liters, gr = grams)	Fertilized area	Times per year	Unit cost	Total cost
1.		N S		kg lts bts gr			$	$
2.		N S		kg lts bts gr			$	$
3.		N S		kg lts bts gr			$	$
4.		N S		kg lts bts gr			$	$
5.		N S		kg lts bts gr			$	$
6.		N S		kg lts bts gr			$	$

b. Disease and plague control

	Pesticides, herbicides, fungicides	N. Natural S. Synthetic	Type (0. IA 1. IB 2. II 3. III 4. IV)	Total amount applied	Unit (kg = Kilos, lts = Liters, cc = cm³, gr = grams)	Treated area	Times per year	Unit cost	Total cost
1.		N S			kg lts cc gr			$	$
2.		N S			kg lts cc gr			$	$
3.		N S			kg lts cc gr			$	$
4.		N S			kg lts cc gr			$	$
5.		N S			kg lts cc gr			$	$
6.		N S			kg lts cc gr			$	$

c. Other inputs

INPUTS	Total cost
1. Picking basket	$
2. Bags to pack the coffee	$
3. Tools for the farm *(i.e. machetes, rasp)*	$
4. Worker's equipment *(i.e. boots, gloves)*	$
5. Parts and accessories for the electrical scythe *(i.e. oil, blades)*	$
6. Other inputs or machinery, which? _____	$

TABLE 3. Activity costs *(paid in 2011)*

	ACTIVITY	Number of unpaid wages	Wage cost	# Wages per year *(Estimate the temporal and permanent worker %)*	# times you performed this activity in 2011	Total cost in a year
	a. Irrigation		$	T % P %		$
b. Fertilization	1. Preparation of organic fertilizers *(Solid and liquid, i.e. compost)*		$	T % P %		$
b. Fertilization	2. Fertilizers transport inside the farm		$	T % P %		$
b. Fertilization	3. Fertilizers transport to the farm		$	T % P %		$
b. Fertilization	4. Application of fertilizers/ organic fertilizers		$	T % P %		$
c. Disease and plague control	1. Transport, preparation and application of products		$	T % P %		$
c. Disease and plague control	2. C.B.B. Control *("re-re")*		$	T % P %		$
d. Farm handling	**1. Weeding** 1. Machete ☐ 3. Hoe ☐ 5. other ☐ 2. E. scythe ☐ 4. Selector ☐ ☐		$	T % P %		$
d. Farm handling	2. Seedling and nursery operations		$	T % P %		$
d. Farm handling	3. Preparation for new coffee sowing (i.e. clearing new fields)		$	T % P %		$
d. Farm handling	4. New coffee sowing		$	T % P %		$
d. Farm handling	5. Soil conservation practices *(I.E. Integrated handling of weeds, live barriers,)*		$	T % P %		$
d. Farm handling	**6. Grafting /cuttings onto stumps** *Performed with scythe or chainsaw* %		$	T % P %		$
d. Farm handling	**6.A. Coffee maintenance *(Pruning)***		$	T % P %		$
d. Farm handling	7. Nursery operations *(for other crops different than coffee)*		$	T % P %		$
d. Farm handling	8. Planting shade trees *(inside the coffee plantation)*		$	T % P %		$
d. Farm handling	9. Shade tree handling		$	T % P %		$
d. Farm handling	10. Management of conservation/ protection areas *(Water sources, rivers, woods)*		$	T % P %		$
d. Farm handling	11. Road management		$	T % P %		$
e. Harvest and post-harvest	1. Coffee picking costs *(only wages)* — Contractual		$	T % P % *Kilos*		$
e. Harvest and post-harvest	1. Coffee picking costs *(only wages)* — By the kilo	→	*Cost per kilo* $	→		$
e. Harvest and post-harvest	2. Milling and drying *(Washing and drying in the farm)*		$	T % P %		$
e. Harvest and post-harvest	3. Transport of dry parchment or cherry coffee to the point of sale	*Cost per package*	$	*Packages* →	*Kg / Package*	$
	f. Management and supervision		$	T % P %		$
	g. Other activity, which? _____		$	T % P %		$

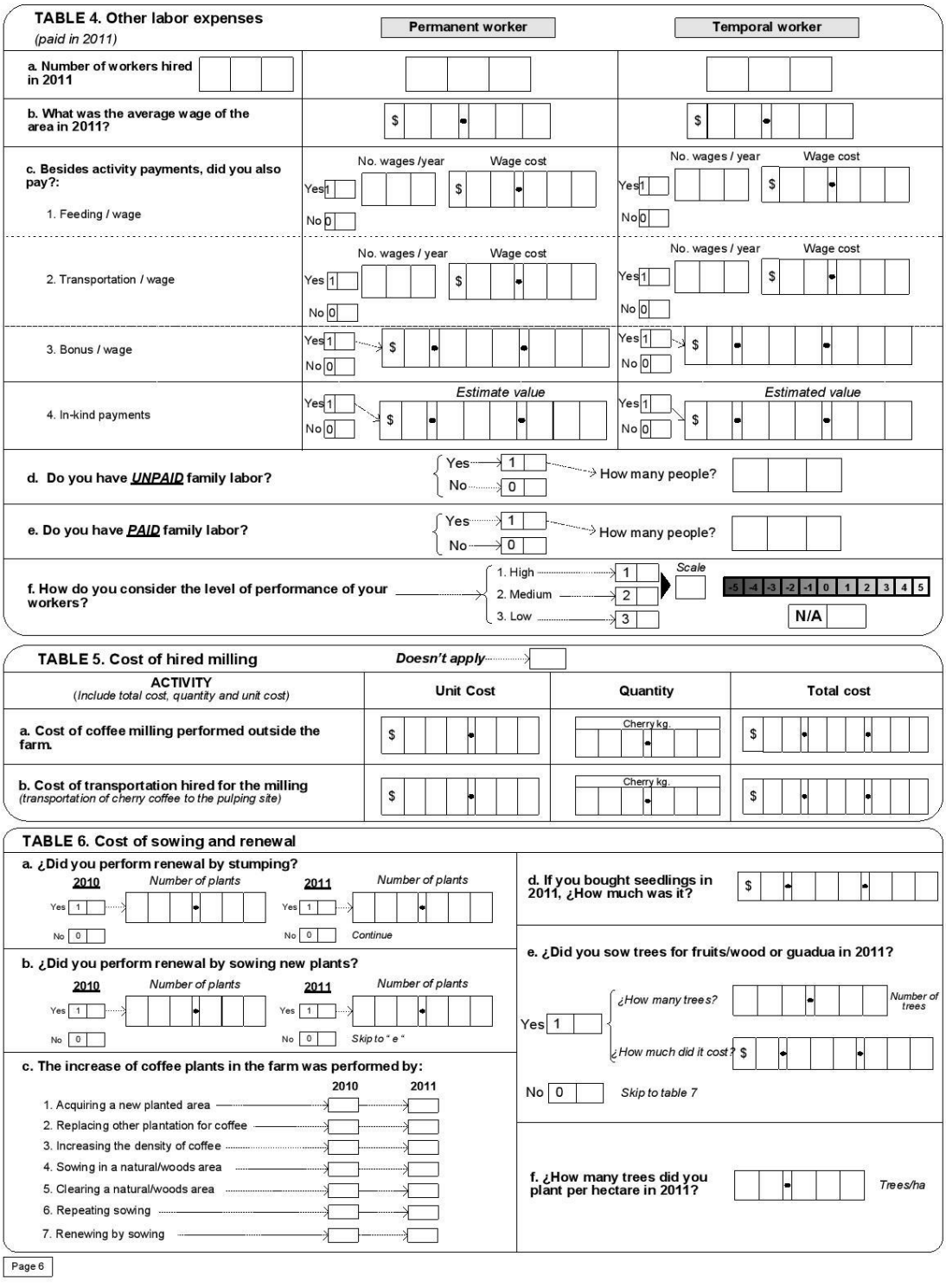
TABLE 4. Other labor expenses
(paid in 2011)
Permanent worker
Temporal worker
a. Number of workers hired in 2011
b. What was the average wage of the area in 2011?
c. Besides activity payments, did you also pay?:
No. wages /year
No. wages / year
Wage cost
Yes 1
No 0
1. Feeding / wage
2. Transportation / wage
3. Bonus / wage
4. In-kind payments
Estimate value
Estimated value
d. Do you have UNPAID family labor?
e. Do you have PAID family labor?
Yes 1
No 0
How many people?
f. How do you consider the level of performance of your workers?
1. High 1
2. Medium 2
3. Low 3
Scale
-5 -4 -3 -2 -1 0 1 2 3 4 5
N/A
TABLE 5. Cost of hired milling
Doesn't apply
ACTIVITY
(Include total cost, quantity and unit cost)
Unit Cost
Quantity
Total cost
a. Cost of coffee milling performed outside the farm.
b. Cost of transportation hired for the milling
(transportation of cherry coffee to the pulping site)
Cherry kg.
TABLE 6. Cost of sowing and renewal
a. ¿Did you perform renewal by stumping?
2010
2011
Number of plants
Continue
b. ¿Did you perform renewal by sowing new plants?
Skip to " e "
c. The increase of coffee plants in the farm was performed by:
2010
2011
1. Acquiring a new planted area
2. Replacing other plantation for coffee
3. Increasing the density of coffee
4. Sowing in a natural/woods area
5. Clearing a natural/woods area
6. Repeating sowing
7. Renewing by sowing
d. If you bought seedlings in 2011, ¿How much was it?
e. ¿Did you sow trees for fruits/wood or guadua in 2011?
¿How many trees?
Number of trees
¿How much did it cost?
Skip to table 7
f. ¿How many trees did you plant per hectare in 2011?
Trees/ha
Page 6

TABLE 7. Energy costs

ENERGY TYPE		Amount used	Unit	Unit cost	Total cost of fuel	% used in coffee activities
a. Electricity	Yes 1 / No 0		1. Kw (Kw = Kilowatts)	$/kw	$	$ %
b. Woods, logs or coal	Yes 1	1. Woods 1	1. Kg / 2. bags	$	$ %	
		2. Forest plantation 2	1. Kg / 2. bags	$	$ %	
		3. Stumps or sticks 3	1. Kg / 2. bags	$	$ %	
		4. You bought it 4	1. Kg / 2. bags	$	$ %	
		5. Other 5	1. Kg / 2. bags	$	$ %	
		6. Cisco 6	1. Kg / 2. bags	$	$ %	
	No 0					
c. Hydrocarbons	Yes 1	1. Gasoline 1	1. Lts / 2. Gl	$	$ %	
		2. Diesel 2	1. Lts / 2. Gl	$	$ %	
		3. Gas 3	1. Pipe / 2. Pound / 3. m³	$	$ %	
	No 0					

TABLE 8. Farm assets

Description	¿How many ...?	Total value paid	¿For how long have you had it?
1. Constructions and infrastructure *(ej: Millers, accommodations, etc)*		$	
2. Vehicles *(Trucks, vans, etc)*		$	
3. Motorcycles		$	
4. Silo		$	
5. Becolsub		$	
6. Puliping machine		$	
7. Engine		$	
8. Chainsaw		$	
9. Electric scythe		$	
10. Toaster		$	
11. Bombs		$	
12. Computer		$	
13. Scale		$	
14. Electricity generator		$	
15. Other, ¿Which? _____		$	

TABLE 9. General expenses

a. Management costs *(i.e.: Office rent, office materials, phone bill , fax, cellphone bill, do not include labor costs from table 4)*		$
b. Monthly payment of insurance *(i.e. For coffee plantation)*		$ N/A
c. Taxes and contributions related to the business	1. Predial tax	$ N/A
	2. Rent tax *(if you don't declare, the value of the retención en la fuente)*	$ N/A
	3. Contributions to producer associations	$ N/A
	4. Others, ¿Which? (i.e.: Industry and commercial taxes)	$
d. Maintenance expenses	1. Constructions	$
	2. Vehicles	$
	3. Equipment	$
e. Other expenses (aqueduct and others) ¿Which?		$

TABLE 11. Credits

a. Do you have credits or debts at the moment(*only for coffee activities*)? Yes 1 / No 0

b. Did you have the necessity of asking for a loan or credit in 2011? (for cofffee activities) Yes 1 / No 0 — *¿How many did you solicit?* — *¿How many were approved?*

	Instituton	Credit value
I. Formal credit	1. Bank	
	2. Coffee Cooperative	
II. Informal credit	1. producer's association	
	2. Lender	
	3. Coffee buyer	
	4. Relative, friend, neighbor	
	5. Credit and savings cooperative	
	6. Other ¿Which?	

TABLE 13. Family economy

a. ¿What percentage of the family income comes from coffee?	%
b. ¿What percentage of family labor *(≥ 10 years) is used regularly in coffee production*?	%
c. ¿Do you produce in your farm crops for family consumption ?	Yes 1 No 0
d. ¿Are there any other products in the farm that give you extra income?	Yes 1 No 0

TABLE 13.A Aid received

¿Did you receive In 2011?:

a. Subsidies — Yes 1 / No 0

b. Money — Yes 1 / No 0

1. Comitee or FNC 2. Certifier 3. Goverment 4. NGO 5. Other

c. In-kind aid *(equipment, tools or inputs)*

Yes 1 No 0 *Skip to table 14*

1. Tina tank
2. Drier
3. Sprayer
4. Engine
5. E. Scythe
6. Fertilizer
7. Other, ¿which?

TABLE 12. Total income from coffee sales and premiums in 2011 *(certified and non certified)*

1. ¿Did you sell coffee in 2011? → Yes 1 | No 0 *Skip to table 12.1*

2. ¿Did you sell regional coffee in 2011? → Yes 1 | No 0 | Doesn't know 2

3. ¿Did you sell bonificado coffee in 2011? → Yes 1 | No 0 | Doesn't know 2

CONCEPT	(A) Amount produced (@ CPS)	Coffee production area (ha)	(B) Average price per arroba ($ / @ parchment)	Total Income D = (A x B).	Premium per arroba ($ / @ CPS)
a. Total amount of coffee produced in **2011**			b. Yield in **2011** *(@ CPS/ha)*		
c. Certified coffee — 1. SOLD AS CERTIFIED — 1.					
2.					
3.					
c. Certified coffee — 2. SOLD AS NON CERTIFIED (1. Bonificado / 2. Regional / 3. Conventional)					
d. Non certified coffee (1. Bonificado / 2. Regional / 3. Conventional)					
e. Low quality (undergraded beans)					

1. Organic, 2. UTZ Certified, 3. FLO, 4. Rainforest Alliance, 5. Nespresso AAA, 6. 4C, 7. CAFE Practices, 8. Other

TABLE 12.1. Total income from coffee sales and premiums in 2010 *(certified and non certified)*

1. ¿Did you sell coffee in 2010? → Yes 1 | No 0 *Skip to table 12.A*

2. ¿Did you sell regional coffee in 2010? → Yes 1 | No 0 | Doesn't know 2

3. ¿Did you sell bonificado coffee in 2010? → Yes 1 | No 0 | Doesn't know 2

CONCEPT	(A) Amount produced (@ CPS)	Coffee production area (ha)	(B) Average price per arroba ($ / @ parchment)	Total Income D = (A x B).	Premium per arroba ($ / @ CPS)
a. Total amount of coffee produced in **2010**			b. Yield productivity in **2010** *(@ CPS/ha)*		
c. Certified coffee — 1. SOLD AS CERTIFIED — 1.					
2.					
3.					
c. Certified coffee — 2. SOLD AS NON CERTIFIED (1. Bonificado / 2. Regional / 3. Conventional)					
d. Non certified coffee (1. Bonificado / 2. Regional / 3. Conventional)					
e. Low quality (undergraded beans)					

1. Organic, 2. UTZ Certified, 3. FLO, 4. Rainforest Alliance, 5. Nespresso AAA, 6. 4C, 7. CAFE Practices, 8. Other

TABLE 12.A Factors that affect production

1. Was the farm was affected by one of the next problems?:

	In 2010		In 2011	
a. C.B.B	Yes 1 / No 0	*Infestation* %	Yes 1 / No 0	*Infestation* %
b. Rust	Yes 1 / No 0	*Infection* %	Yes 1 / No 0	*Infection* %

2. Do you know what was the production cost per arroba in the farm?

(Total cost / @ CPS)	In 2010	In 2011
	☐ *N/A* ☐ *Doesn't know*	☐ *N/A* ☐ *Doesn't know*

3. What is the normal level of production in your farm?

(@ parchment)	In 2010	In 2011
	☐ *N/A*	☐ *N/A*

TABLE 12.B. Premium

a. Do you know the premium payed by the certification? Yes 1 / No 0

b. Did you sell coffee with premium this year? Yes 1 / No 0

c. What did you invest/plan to invest the premium money in?

1. In the coffee plantation
2. Payment of debts related to coffee plantation or activites
3. Buying lands
4. Farm repairs/improvements
5. Payment of personal/familiar expenses
6. Study payments
7. You haven't thought in what to invest it
8. Other, ¿Which?_____

TABLE 14. Other incomes

Due to the certification process, did you obtain other incomes in 2011? :

a. Promoter, internal inspector, technician. $

b. Agro-ecotourism $

c. Other, ¿Which? $

d. No other incomes (*Mark X*)

TABLE 16. Coffee milling

a. Did you mill your coffee at your farm in 2011? Yes 1 / No 0

b. ¿What type of miller did you have in 2011?

1. Becolsub system 1
2. Tina tanks 2
3. Conventional 3
4. Other (Manual) 4
5. Doesn't have one 5

c. What type of tolva did you have in 2011?

1. Dry tolva 1
2. Wet tolva 2
3. Doesn't have a tolva 3

d. Do you put the coffee in the chute of the pulping machine? Yes 1 / No 0

e. Do you pulp the coffee with water? Yes 1 / No 0

f. Do you transport the coffee in sap to the fermentation tank using water? Yes 1 / No 0

g. Do you transport the pulp to the pit using water? Yes 1 / No 0

h. How do you take out the mucilage from the coffee?

1. Natural fermentation
   a. Cleanse in fermentation tank
   b. Cleanse in the carrying channel
   c. Other, ¿Cuál?_____
2. Mechanic removal (desmucilaginador)
   a. Do you mix the resulting mucilage with the pulp in a worm screw? Yes 1 / No 0
   b. If you don't, what do you do with the mucilage? _____
   c. Do you calibrate the desmucilaginador Yes 1 / No 0

i. Do you have a pit? Yes 1 / No 0 — **Does the pit have a ceiling?** Yes 1 / No 0

j. Do you transport with water the clean coffee to the drier ? Yes 1 / No 0 / N/A 2

k. Where does the water for the milling come from?

1. Aqueduct 1
2. River, pond or lagoon 2
3. Well 3
4. Stream 4
5. Other 5

Which?_____

l. Treatment before and after the pulping

1. Do you pulp the coffee the same day it's picked? Yes 1 / No 0
2. You ferment the coffee in tanks for:
   1. Less than 18 hours
   2. Between 18 and 36 hours
   3. More than 36 hours
3. Do you wash the coffee with clean water after the fermentation? Yes 1 / No 0

m. How do you dry your coffee?

1. Natural dry 1 ____ %

1. Uncovered patio (dirty with dust)
2. Covered patio/floor (cement, plastic,)
3. Marquee *(parabolic dry)*
4. Elevated *(Elda, attic or oriador)*

2. Artificial dry *(SILO)* 2 ____ %

Fan — Type of fuel:
1. Electricity
2. Gasoline
3. Diesel

Burner — Type of fuel:
1. Natural gas
2. Propane
3. Coal
4. Coke coal
5. Recycled material
   a. dust
   b. Cisco
   c. Coffee woods
   d. Other

2.1. Does the silo have a heat exchanger? Yes 1 / No 0

3. Doesn't dry the coffee 3

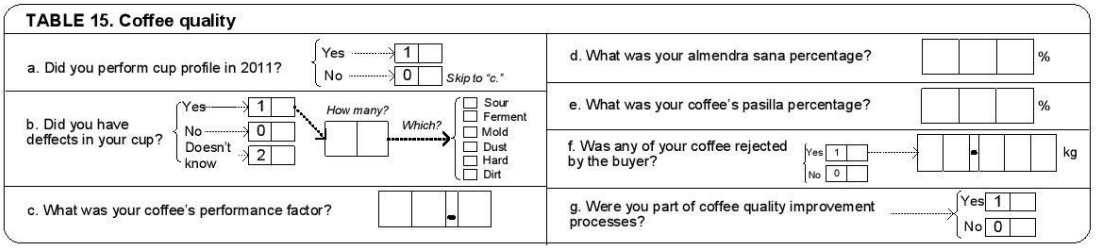
TABLE 15. Coffee quality
a. Did you perform cup profile in 2011?
Yes 1
No 0
Skip to "c."
b. Did you have deffects in your cup?
Yes 1
No 0
Doesn't know 2
How many?
Which?
Sour
Ferment
Mold
Dust
Hard
Dirt
c. What was your coffee's performance factor?
d. What was your almendra sana percentage? %
e. What was your coffee's pasilla percentage? %
f. Was any of your coffee rejected by the buyer?
Yes 1
No 0
kg
g. Were you part of coffee quality improvement processes?
Yes 1
No 0

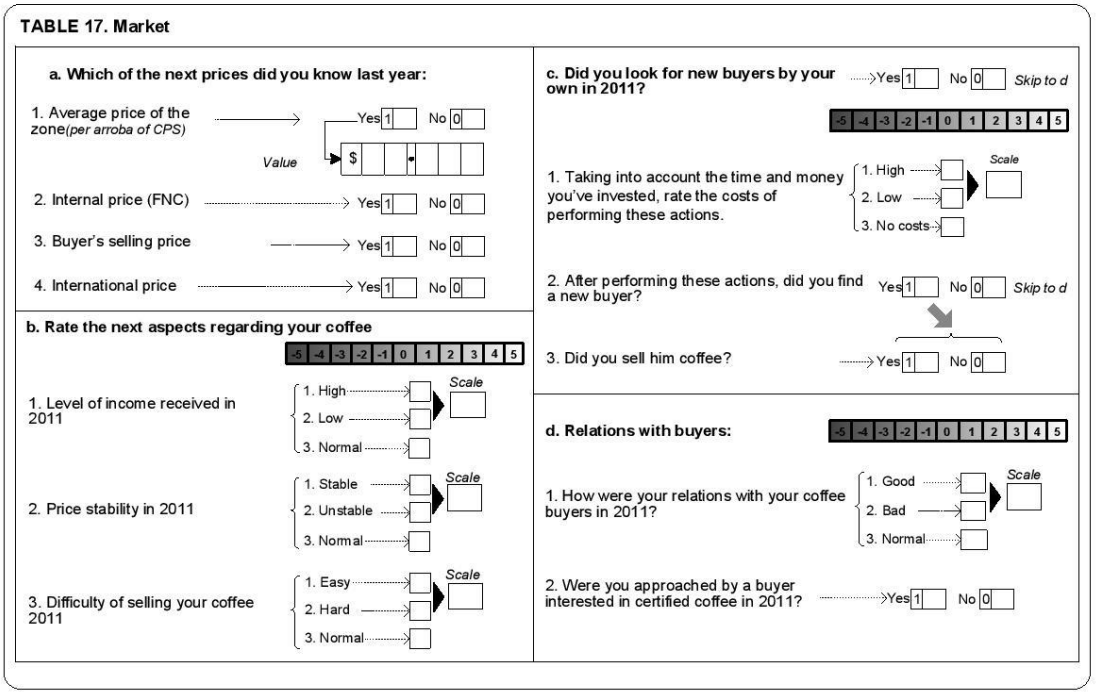
TABLE 17. Market
a. Which of the next prices did you know last year:
1. Average price of the zone(per arroba of CPS)
Yes 1
No 0
Value
$
2. Internal price (FNC)
Yes 1
No 0
3. Buyer's selling price
Yes 1
No 0
4. International price
Yes 1
No 0
b. Rate the next aspects regarding your coffee
-5 -4 -3 -2 -1 0 1 2 3 4 5
1. Level of income received in 2011
1. High
2. Low
3. Normal
Scale
2. Price stability in 2011
1. Stable
2. Unstable
3. Normal
Scale
3. Difficulty of selling your coffee 2011
1. Easy
2. Hard
3. Normal
Scale
c. Did you look for new buyers by your own in 2011?
Yes 1
No 0
Skip to d
-5 -4 -3 -2 -1 0 1 2 3 4 5
1. Taking into account the time and money you've invested, rate the costs of performing these actions.
1. High
2. Low
3. No costs
Scale
2. After performing these actions, did you find a new buyer?
Yes 1
No 0
Skip to d
3. Did you sell him coffee?
Yes 1
No 0
d. Relations with buyers:
-5 -4 -3 -2 -1 0 1 2 3 4 5
1. How were your relations with your coffee buyers in 2011?
1. Good
2. Bad
3. Normal
Scale
2. Were you approached by a buyer interested in certified coffee in 2011?
Yes 1
No 0

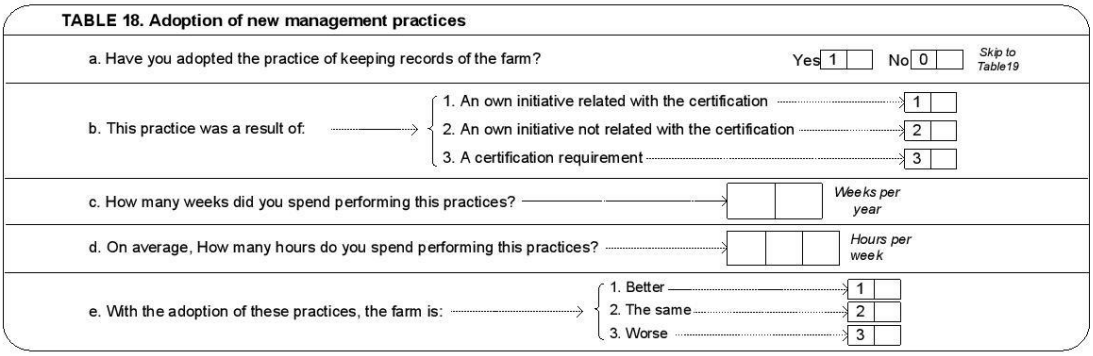
TABLE 18. Adoption of new management practices
a. Have you adopted the practice of keeping records of the farm?
Yes 1
No 0
Skip to Table19
b. This practice was a result of:
1. An own initiative related with the certification 1
2. An own initiative not related with the certification 2
3. A certification requirement 3
c. How many weeks did you spend performing this practices?
Weeks per year
d. On average, How many hours do you spend performing this practices?
Hours per week
e. With the adoption of these practices, the farm is:
1. Better 1
2. The same 2
3. Worse 3

TABLE 19. Training to implement sustainability initiatives

a. Did you and your workers receive any type of training:

1. NGO
2. Coffee union
3. Buyer
4. Seal / initiative
5. Goverment
6. Research institution or University
7. Other, Which? _____

		Hours spent	Who provides the training *(Mark the number)*	Transportation length *(Hours)*	Transportation costs	Was the training free?	Cost of training ($)
1. To improve farm activities *(i.e. Production, technological processes, quality topics, good agricultural practices)*	Yes 1 / No 0					1 Yes / 0 No	
2. Commercialization support *(information about prices, market contacts and fairs)*	Yes 1 / No 0					1 Yes / 0 No	
3. Certification and verification	Yes 1 / No 0					1 Yes / 0 No	
4. Health and wellbeing topics	Yes 1 / No 0					1 Yes / 0 No	
5. Environmental topics	Yes 1 / No 0					1 Yes / 0 No	
6. Traceability, management and financial topics	Yes 1 / No 0					1 Yes / 0 No	
7. Literacy programs	Yes 1 / No 0					1 Yes / 0 No	
8. Others, Which? _____	Yes 1 / No 0					1 Yes / 0 No	

TABLE 20. Implementation of good practices

a. As a result of the participation in training, have you implemented any good practice initiative in your farm in 2011?

N/A

Yes 1 — *Which?*

No 0 — *Skip to Table 21*

1. Environment conservation → 1
2. Milling → 2
3. Good agricultural practices → 3
4. Management, commercialization, certification, records, health and security, labor. → 4
5. Agrochemicals, plague and disease control, C.B.B. and rust → 5
6. Farm improvement (construction, cleaning, etc.) → 6
7. Fertilization, organic mulching → 7
8. Coffee quality improvement , coffee picking, sowing → 8
9. Change of varieties, coffee production technification, renewal → 9
10. Other, Which? _____ → 10

b. Were the costs of this practice shared with other coffee producers? N/A

Yes 1 / No 0

TABLE 21. Certification costs and infrastructure investment

a. Did you pay for your farm inspection?	Yes 1 / No 0	$ C
b. Did you pay for the external certification or verification?	Yes 1 / No 0	$ C
c. Did you pay for the certification paperwork *(copies, formularies, etc.)*?	Yes 1 / No 0	$ C
d. Did you invest in infrastructure or modifications for the certification?	Yes 1 / No 0	$ C
e. Did you invest in general farm infrastructure *(i.e. millers and dryers construction and maintenance, home improvement, roads, etc.)*	Yes 1 / No 0	$

TABLE 22. Eventualities

a. In 2011, was the economic situation of your household affected by any of these next events?

1. Droughts	Yes 1	No 0
2. Heavy rains	Yes 1	No 0
3. Cost increases	Yes 1	No 0
4. Serious illness of a family member	Yes 1	No 0
5. Coffee price's drops	Yes 1	No 0
6. Violence, insecurity, thefts	Yes 1	No 0
7. Changes in government politics	Yes 1	No 0
8. Other	Yes 1	No 0

Which? _____

MODULE C. ENVIRONMENTAL DIMENSION

TABLE 23. Energy usage

a. Are you using sustainable energy sources for the production? *(i.e. natural dryers, biogas, coffee cisco or others)* → Yes 1 / No 0

b. Have you installed efficient stoves to cook with firewood? → Yes 1 | No 0 | N/A 2

TABLE 24. Water handling

a. Is there water sources in your farm? Yes 1 / No 0 *Skip to table 25*

b. Did you perform handling and conservation practices for your water sources?

Yes 1 →
- 1. Protection fringes
- 2. Stream fences
- 3. Arborization
- 4. Other

No 0

TABLE 25. Agrochemical application

Interviewer... Are agrochemicals being applied? Yes 1 / No 0 *Skip to table 26*

Note: *Check in table 2 if agrochemicals are being applied before asking*

a. Do you take records of **Agrochemical application**? *(Pesticides, herbicides, fungicides)* → Yes 1 / No 0

b. Is there a designated area to clean the agrochemical application equipment? → Yes 1 / No 0

c. What do you do with the water used to clean agrochemical application equipment?
- 1. You pour it on the floor → 1
- 2. You pour it into a river or stream → 2
- 3. You have a treatment system *(pond, filter, etc.)* → 3
- 4. Other → 4

Which? _____

d. When you apply agrochemicals, what's the distance between you and water sources that are near? ___ *meters*

e. Is agrochemical application performed with technical support?

Yes 1 → *Who gives it*
- 1. the product seller → 1
- 2. An extensionist → 2
- 3. A Private advisor → 3
- 4. Other → 4

Which? _____

NO 0

f. What kind of sprinkling equipment do you use to apply agrochemicals?
- 1. Lever equipment → 1
- 2. Previously retained pressure → 2
- 3. Motorized backpacks → 3
- 4. Semi-stationary → 4

TABLE 26. Fertilizer aplication

Interviewer... Are fertilizers being applied? Yes 1 / No 0

Note: Check in Table 2 If fertilizers are being applied before asking

Skip to Table 27

a. Do you take records of ***fertilizer application***? Yes 1 / No 0

b. Do you perform or hire soil analysis? Yes 1 / No 0

c. Do you apply mulching or soil correctives*(compost, manure, harvest residuals, lime and others)* ? Yes 1 / No 0

d. Is fertilization performed with technical support?

Yes 1 → *Who gives it*
- 1. The product seller → 1
- 2. An extentionist → 2
- 3. A private advisor → 3
- 4. Other → 4

Which? _____

No 0

e. What type of equipment is used for liquid fertilizer application?
- 1. Lever equipment → 1
- 2. Previously retained pressure → 2
- 3. Motorized backpacks → 3
- 4. Semi-stationary → 4
- 5. Doesn't apply → 5

TABLE 27. Water system treatment

a. Does the farm have a residual water's treatment system?

Yes 1
- 1. Infiltration camp
- 2. Modular system for honey waters treatment (S.M.T.A)
- 3. Oxidation pond
- 4. Decanter or skimmer
- 5. Biologic Filter
- 6. Blend with the pulp
- 7. Other, Which? _____

No 0 — *How do you dispose the residual waters from the milling process?*
- 1. You pour them into a superficial source (river, stream,etc.)
- 2. You pour them directly into the soil

b. Where do you dispose the household's residual waters?
- 1. In a septic tank → 1
- 2. In a river, stream or lagoon → 2
- 3. In a patio or a ditch → 3
- 4. In the sewer → 4
- 5. Other, which? _____ → 5

TABLE 28. Recycling and re-use of solid residuals

a. Do you have a recycling program in your farm? Yes 1 NO 0 *Skip to "c."*

1. Coffee pulp	2. Organic material *(Leaves, stumps and sticks, manure, etc.)*	3. Plastic *(bags, bottles, etc.)*	4. Paper and cardboard
YES 1 NO 0	YES 1 NO 0	YES 1 NO 0	YES 1 NO 0

b. How much mulching did you produce in 2011? _____ kilograms

c. Where did you throw the garbage in 2011?
- 1. In a pit
- 2. You burn it
- 3. You bury it
- 4. is picked by the clean service
- 5. You didn't pick it
- 6. Other, Which? _____

TABLE 30. Producer's household

ID	a. Name (Just the first name, i.e Juan, Carlos)	b. Gender (1. Male 2. Female)	c. Age	d. Producer's kinship (1. Boss 2. Husband/wife-companion 3. Son/daughter – step son 4. Father, mother, mother/father in law 5. Grandso - grandaughter 6. Sibling 7. Son/daughter-in-law 8. Aunt/uncle/nephew 9. Other kinship 10. Maid 11. Other) (Mark the corresponding number)	e. Do you know how to read and write? (1. Yes 0. No)	f. Education level achieved (1. None 2. Elementary 3. High school 4. Technological 5. College) (Level achieved)	g. Years approved	h. Do you currently attend class? (1. Yes 0. No)	i. to which of the following social security regimes are you affiliated? (0. None 1. Contributory (EPS) 2. Special (Army, Ecopetrol, Public universities, Magisterial) 3. Subsidized (ARS) 4. Doesn't know, doesn't answer)	j. What activity took most of your time last month? (0. No activity 1. Work 2. Searching for a job 3. Study 4. Household activities 5. Other activity 6. Permantly handicapped for work)	Only for people over 10 years of age: k. How many weeks have you spent looking for a job (answer if you marked option 2 in j.)	Only for people over 10 years of age: l. % of time used in coffee activities during a year	Only for people over 10 years of age: m. % of time used to work in coffee activities outside the farm during the year
1.													
2.													
3.													
4.													
5.													
6.													
7.													
8.													

n. Does any of the household members that are older than 16 y/o speak english? Yes [1] NO [0]

o. Predominant material of the house's outer walls

- 1. Exposed brick → [1]
- 2. Exposed blocks → [2]
- 3. Plastered bricks or blocks → [3]
- 4. Stone or wood → [4]
- 5. Rammed earth → [5]
- 6. Plastered bahareque → [6]
- 7. Exposed bahareque → [7]
- 8. Crude wood → [8]
- 9. Prefabricated material → [9]
- 10. Guadua, cane, other vegetables → [10]
- 11. Zinc, fabric, cardboard, tin, waste, plastic, canvas → [11]
- 12. No walls → [12]

p. Predominant material of the house's floor

- 1. Marble, Polished wood → [1]
- 2. Carpet from wall to wall → [2]
- 3. Floor tile, ceramic, vinyl, tablet, brick or unpolished wood → [3]
- 4. Crude wood, tables or other vegetable → [4]
- 5. Cement or gravel → [5]
- 6. Earth or sand → [6]

q. Which of the next public services do you have in your house

- 1. Electricity → [ ]
- 2. Natural gas → [ ]
- 3. Aqueduct → [ ]
- 4. Sewer system → [ ]
- 5. Garbage recollection → [ ]

r. Including living room and dinning room, How many rooms does your house have? [ ]

s. How many of those rooms are used for sleeping? [ ]

Hoja 15

TABLE 31. Nutrition

a. In 2011, did a member of the household had to eat less or had to stop eating because there wasn't enough food for everyone?

Yes 1 → 1. 1 to 9 days → 1
2. 10 to 29 days → 2
3. More than de 30 days → 3
How many months ? → ___

NO 0 *Skip to Table 32*

b. In what month did this happen?

1. January	1	5. May	5	9. September	9
2. February	2	6. June	6	10. October	10
3. March	3	7. July	7	11. November	11
4. April	4	8. August	8	12. December	12

TABLE 32. Household assets

a. Which of the next assets do you have in your household?:

1. Color T.V	Yes 1	NO 0
2. Freezer	Yes 1	NO 0
3. Electric or gas stove	Yes 1	NO 0
4. Washing machine	Yes 1	NO 0
5. Sound system	Yes 1	NO 0
6. Computer	Yes 1	NO 0
7. Internet	Yes 1	NO 0
8. Cellphone	Yes 1	NO 0
How many cellphones?	___	
9. Working animals	Yes 1	NO 0
How many?	___	

TABLE 33p. Access to education and formal training

a. What's the average education level of your workers?

1. None
2. Elementary
3. High school
4. Technological

Education level ___

b. Did the producer offer the workers and their families free training? *(i.e. health, security, environment, quality, abilities)*

Yes → 1 → *How many?* ___
No → 0

TABLE 35p. Access to health services

a. How far is the closest health post to the farm?

a.1 *Distance* ___ km → a.3 *Travel length* ___ minutes
a.2. ☐ *Doesn't know* a.4. ☐ *Doesn't know*

b. How easy is for the worker to access health care?

1. Easy access → 1
2. Restricted access → 2
3. No access → 3

c. Is there a medicine cabinet in good conditions at the farm? Yes 1 NO 0

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TABLE 34p. Living conditions of the workers

a. Do workers have access to water during the day? Yes 1 / No 0

b. Do workers have a place to stay in the farm?

1. In a room inside the producer's house → 1
2. In a place outside the producer's house → 2
3. There's no place to stay → 3 *Skip to table 36p*

c. How easy is it to access water for personal care in the place where workers sleep?

1. There's always easy access inside or outside the house → 1
2. Easy access but not always available → 2
3. Available from 5 to 20 minutes → 3
4. There's no water → 4

d. Is there a clean and safe place for cooking? Yes 1 No 0

e. Do you cook with firewood? Yes 1 No 0

f. Is the water used in cooking evacuated through a sewage? Yes 1 No 0

g. Is there a smokestack to avoid smoke accumulation inside the kitchen *(in case you cook with firewood)*? Yes 1 No 0

TABLE 36p. Attention in case of accidents

a. What do you do in the farm when a worker suffers an accident, gets seriously wounded or gets sick?

1. You take him to a health post → 1
2. You take care of him at the farm → 2
3. The worker takes care of himself → 3
4. You give him money so he looks for attention himself → 4
5. You don't do anything → 5
6. Other, Which? ___ → 6

TABLA 37p. Working security

a. Did any of the following accidents occured at the farm in 2011:

1. Sickness or poisoning due to agrochemical handling → 1
2. Wounds due to tool or machinery usage → 2
3. Bites or stings from animals → 3
4. Falls or injuries → 4
5. Other accidents → 5
6. None → 6

b. Is there restrictions to some people for agrochemical handling?

1. Yes → 1 → 1. Pregnant woman / 2. Minors / 3. Handicapped people / 4. Others
0. No → 0
2. Doesn't apply → 2

c. Do you have agrochemical application equipment ?

1. Yes → 1 → 1. Gloves / 2. Masks / 3. Overalls / 4. Boots
0. No → 0
2. Doesn't apply → 2

d. The producer have trained workers in any of the following aspects:

1. Security at work	1 Yes	0 No
2. Agrochemical handling *(Storage, application and disposal)*	1 Yes	0 No
3. First aid	1 Yes	0 No

TABLE 39p. Basic rights for workers

a. The workers contract is — Written 1 / Verbal 2

b. Have the workers ever gathered to discuss with you about labor rights ?

Yes 1

No 0 →
- 1. It hasn't been needed → 1
- 2. It's not allowed → 2
- 3. Other reason → 3

TABLE 40. Associations or organizations of producers in the community

Note: Check question 20 if the producer belongs to a group

Interviewer...does the producer belongs to any group? Yes 1 / No 0

a. Were you part of one or several coffee producer groups or organizations in 2011?

Yes 1 | No 0

1. Were the directors picked through voting?
- 1. Always → 1
- 2. Sometimes → 2
- 3. Never → 3

2. Were the decisions taken by mayority?
- 1. Always → 1
- 2. Sometimes → 2
- 3. Never → 3

3. Was the price fixing clear?
- 1. Always → 1
- 2. Sometimes → 2
- 3. Never → 3
- 4. Doesn't apply → 4

1. Why weren't you part?
- 1. There's no group in the zone → 1
- 2. Doesn't know the requirements to be a memeber → 2
- 3. You think the group doesn't benefit you at all → 3
- 4. The costs/requirements are too expensive for the benefits received → 4
- 5. The group is new → 5
- 6. Other reason → 6

which?_____

2. Were you part of any group before? Yes 1 / No 0

b. Which of these next activities were performed by the most important group that you were part of in 2011?

ACTIVITIES		It was performed with group's resources	Someone of the farm took part of the project
1. Infraestructure for agricultural products storage	1 Yes 0 No	1 Yes 0 No	1 Yes 0 No
2. Establishment or maintenance of cooperative seedbeds	1 Yes 0 No	1 Yes 0 No	1 Yes 0 No
3. Projects to improve the access to water supply	1 Yes 0 No	1 Yes 0 No	1 Yes 0 No
4. Projects to improve health attention	1 Yes 0 No	1 Yes 0 No	1 Yes 0 No
5. Projects for residual water treatment	1 Yes 0 No	1 Yes 0 No	1 Yes 0 No
6. Projects to improve of build schools	1 Yes 0 No	1 Yes 0 No	1 Yes 0 No
7. Training in good agricultural practices	1 Yes 0 No	1 Yes 0 No	1 Yes 0 No
8. Gathering and commercialization	1 Yes 0 No	1 Yes 0 No	1 Yes 0 No
9. Other. Which? _____	1 Yes 0 No	1 Yes 0 No	1 Yes 0 No

TABLE 41. Producer perceptions about sustainability initiatives

How do you rate each of the next aspects about your household, farm and community:

	In 2010 Scale		In 2011 Scale	
a. Income				
b. Household's quality of life				
c. Health conditions of your family				
d. Farm's economic situation				
e. Farm's environmental care				
f. Quality of relations with the workers		N/A		N/A
g. General management of the farm				
h. Coffee sell opportunities				
i. Village's environmental care				
j. Community relations				

-5 -4 -3 -2 -1 0 1 2 3 4 5

TABLE 42. Difficulties with the adoption of certification requirements or program entry

a. Have you had any difficulty to fulfill the requirements of the certification/initiative?

I didn't know i was certified ☐ *Skip to table 43*

Yes 1 ☐ — *Which?*

No 0 ☐

1. Register workers to social security 1 ☐
2. Requirements handling 2 ☐
3. Investment in miller, dryer, warehouses (infrastructure for coffee production) 3 ☐
4. Equipment usage for agrochemical handling 4 ☐
5. Hard and liquid residual handling(garbage, honey water, etc.) 5 ☐
6. Child labor in coffee production 6 ☐
7. Certification payment 7 ☐
8. Inspection payment 8 ☐
9. Other, Which?_____ 9 ☐

TABLE 43. Expectations

C

a. How do you feel about the results obtained from the certification or sustainability initiative?

1. Satisfied ☐
2. Indifferent ☐
3. Insatisfied ☐

Scale ☐

-5 -4 -3 -2 -1 0 1 2 3 4 5

a.1. Why?

1. Premium ☐
2. Advice received ☐
3. Farm management ☐
4. Aid and benefits ☐
5. Environment protection ☐
6. Coffee quality ☐
7. Other, which? ☐

b. Do you wish to continue with the certification?

1. Probably ☐
2. Doesn't know ☐
3. Unlikely ☐

Scale ☐

-5 -4 -3 -2 -1 0 1 2 3 4 5

b.1. Why?

1. Premium ☐
2. Advice received ☐
3. Farm management ☐
4. Aid and benefits ☐
5. Environment protection ☐
6. Coffee quality ☐
7. Other, which? ☐

c. Do you plan to get certified in other sustainability initiative or seal?

Yes 1 ☐

No 0 ☐

Doesn't know 0 ☐

1. Organic ☐
2. UTZ Certified ☐
3. FLO ☐
4. Rainforest Alliance ☐
5. Nespresso AAA ☐
6. 4C ☐
7. CAFE Practices ☐

FIELD VERIFICATION

TABLE 44. Soil handling *(Interviewer estimation)*

a. Estimate the soil coverage % of the coffee planted area *(0 to 100%)* ..... , %

b. Estimate the % of coffee planted area with erosion problems *(0 to 100%)* ..... , %

c. Do you perform any of the following practices?

1. Drip irrigation	Yes 1	NO 0
2. Tanks or wells for water storage	Yes 1	NO 0
3. Plant contouring	Yes 1	NO 0
4. Protection areas	Yes 1	NO 0
5. Soil coverage	Yes 1	NO 0
6. Pulping with low water consumption	Yes 1	NO 0
7. Drain canals or trenches	Yes 1	NO 0
8. Terraced planting	Yes 1	NO 0
9. Live fences	Yes 1	NO 0
10. Other	Yes 1	NO 0

¿Which? _____

TABLE 45. Tree cover handling in the farm

Aspect	Percentage
a. % of multiple layer cover in the coffee plantations *(Three or more layers with shadow)*	%
b. % of coffe with two or more shadow species	%
Banana	
c. % of coffee as monoculture *(Full exposure)*	%

TABLE 46. Environmental management of the farm

a. Do you have a written environmental plan or a farm's environmental map? Yes 1 NO 0

b. How many species of shadow trees does the farm have? .....

c. How many shadow trees do you have per hectare? ..... **/ ha**

TABLE 48. Carbon measures

Trees	Diameter at breast height *(DBH)*	Species	Coffee plants	Perimeter of 15 cm's above ground *(cm)*	Plant's height *(cm)*
1	cm		1	cm	cm
2	cm		2	cm	cm
3	cm		3	cm	cm
4	cm		4	cm	cm
5	cm		5	cm	cm
6	cm		6	cm	cm
7	cm		7	cm	cm
8	cm		8	cm	cm
9	cm		9	cm	cm
10	cm		10	cm	cm
Average	cm		Average	cm	cm

(The recommendation is that the plant's diameter must be taken in plots that are 4 to 6 years old, because that's when the most carbon capture is expected)

Concept	SPECIES 1	SPECIES 2	SPECIES 3	SPECIES 4	SPECIES 5
Name of the species					
Average height *(mts)*					
Average age *(years)*					
Number of trees					

Observations

1. Relative's or friend's name *(to contact the producer if it's needed)* _____

2. Cellphone

Survey control

Ending time AM PM

Interviewer _____

Supervisor _____

Write here important facts that help understand the information or that helps locate the coffee producer for the next survey

Appendix 2.1: Nespresso AAA_1 vs conventional producers for factors facilitating participation and farm economics - PSM-Kernel

	2008					2009					2011				
	AAA_1	Ctrol	Dif.	S.E.	t-stat	AAA_1	Ctrol	Dif.	S.E.	t-stat	AAA_1	Ctrol	Dif.	S.E.	t-stat
Factors facilitating participation															
% of farmers that received subsidies and cash transfers*						42.4%	34.5%	7.9%	0.1	1.1	23.9%	21.4%	2.5%	0.1	0.4
% of farmers that received Aid in kind*						23.9%	30.1%	-6.2%	0.1	-1.0	54.9%	40.6%	14.3%	0.1	2.0 **
Average hours of training in GAP per year	28.4	26.3	2.2	8.5	0.3	10.3	25.9	-15.6	4.8	-3.3 ***	44.5	23.6	20.9	8.2	2.5 ***
% of producers who were trained to improve the quality of coffee	63.0%	21.2%	41.9%	0.1	6.3 ***	2.2%	12.8%	-10.7%	0.0	-2.9 ***	48.9%	14.9%	34.0%	0.1	5.1 ***
% of producers that participated from coffee tasting trials	26.1%	16.9%	9.2%	0.1	1.5 *	17.4%	18.3%	-0.9%	0.1	-0.2	15.2%	12.9%	2.3%	0.1	0.5
% of producers who fertilize under technical recommendation	29.3%	21.2%	8.1%	0.1	1.2	45.7%	35.1%	10.6%	0.1	1.5 *	45.7%	48.7%	-3.1%	0.1	-0.4
% of producers that have credits	16.3%	14.5%	1.8%	0.0	0.4	39.1%	15.1%	24.1%	0.1	3.9 ***	38.0%	44.4%	-6.3%	0.1	-0.9
% of producers with milling machine	23.9%	24.9%	-1.0%	0.1	-0.2	22.8%	12.3%	10.6%	0.1	1.8 **	58.7%	70.3%	-11.7%	0.1	-1.6 *
% of producers employing cover floor or parabolic dry to sun-dry coffee	85.9%	62.5%	23.3%	0.1	3.8 ***	66.3%	74.5%	-8.2%	0.1	-1.2	80.4%	86.6%	-6.2%	0.1	-1.1
% of harvest sold as parchment	91.2%	88.3%	2.9%	0.0	0.7	77.1%	82.8%	-5.7%	0.0	-1.2	80.9%	78.4%	2.5%	0.1	0.5
% of farmers who perform Soil analysis	3.3%	1.8%	1.5%	0.0	0.6	4.3%	4.0%	0.3%	0.0	0.1	6.5%	4.8%	1.7%	0.0	0.5
Sythetic Fertilizers applied (kg/ha)	880.2	568.4	311.8	152.0	2.1 **	966.0	896.2	69.7	79.5	0.9	969.9	969.0	0.9	106.2	0.0
% of farmers who adopt GAP after	60.9%	43.7%	17.2%	0.1	2.4 ***	41.3%	39.5%	1.9%	0.1	0.3	65.2%	35.7%	29.5%	0.1	4.3 ***
% or producers that keep records	4.3%	5.1%	-0.8%	0.0	-0.3	9.8%	1.0%	8.8%	0.0	2.6 ***	23.9%	11.7%	12.2%	0.1	2.2 **
% of renovated trees	10.8%	14.8%	-4.0%	0.0	-1.1	11.6%	10.4%	1.2%	0.0	0.3	25.0%	25.4%	-0.4%	0.0	-0.1
% of trees resistant to rust infection	23.7%	20.4%	3.3%	0.1	0.6	30.0%	24.8%	5.2%	0.1	1.0	56.0%	54.9%	1.2%	0.1	0.2
Farm economics															
Gross revenue from coffee (Thousand COP/ha)	5,999	3,044	2,954	698.4	4.2 ***	8,692	6,008	2,683	854.8	3.1 ***	6,599	5,317	1,282	963.5	1.3 *
Production cost (Thousand COP/ha)	3,025	1,921	1,104	294.3	3.8 ***	2,727	2,182	545.0	239.8	2.3 **	2,797	2,406	390.6	291.3	1.3 *
Gross margin from coffee (Thousand COP/ha)	2,974	1,124	1,850	526.1	3.5 ***	5,965	3,827	2,138	714.0	3.0 ***	3,802	2,911	891.6	773.3	1.2 -
Average Farm-gate price (COP/@)	61.4	54.8	6.6	1.2	5.3 ***	83.3	73.5	9.8	1.6	6.1 ***	100.6	92.3	8.3	1.9	4.4 ***
Average cost (COP/@)	41.8	46.9	-5.1	4.5	-1.1	31.2	35.3	-4.1	3.6	-1.1 -	66.7	65.4	1.3	9.4	0.1
Average gross margin (COP/@)	19.8	8.3	11.5	4.8	2.4 ***	52.0	38.4	13.5	4.1	3.3 ***	33.8	27.0	6.8	9.8	0.7
Share of labor Cost (ha)	46.3%	40.6%	5.7%	0.0	1.8 **	42.4%	32.5%	10.0%	0.0	3.1 ***	41.3%	33.6%	7.6%	0.0	2.2 **
Yield of parchment coffee (@/ha)	92.5	53.5	39.0	10.1	3.9 ***	98.0	79.6	18.4	10.6	1.7 **	63.4	52.6	10.9	9.3	1.2

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations.

*** p< 0,01; ** p< 0,05; * p<0,1

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

Appendix 2.2: Nespresso AAA_1 vs conventional producers for risk, vulnerability and perceptions - PSM-Kernel

	2008					2009					2011				
	AAA_1	Ctrol	Dif.	S.E.	t-stat	AAA_1	Ctrol	Dif.	S.E.	t-stat	AAA_1	Ctrol	Dif.	S.E.	t-stat
Risk and vulnerability															
% of family income coming from coffee	69.4%	61.0%	8.5%	0.0	1.8 **	66.5%	63.9%	2.7%	0.0	0.8	59.9%	56.9%	3.1%	0.0	0.7
% of farms with food crops	93.5%	94.5%	-1.0%	0.0	-0.3	98.9%	96.5%	2.4%	0.0	1.0	95.7%	93.6%	2.1%	0.0	0.6
% of farms with cash crops	41.3%	31.9%	9.4%	0.1	1.4 *	91.3%	88.8%	2.5%	0.0	0.5	69.6%	40.7%	28.9%	0.1	4.1 ***
% Paid labor	59%	50%	9%	0.0	2.1 **	47%	42%	5%	0.0	1.3 *	37%	36%	0%	0.0	0.1
Wage per day (COP/per day)	8,380	8,287	93.3	379.0	0.3	9,562	8,538	1024.3	446.7	2.3 **	10,080	9,487	592.7	476.6	1.2
Hired workers	4.4	4.2	0.2	0.7	0.2	1.7	1.2	0.5	0.2	2.6 ***	2.3	2.1	0.2	0.4	0.5
Number of assets at the household (1 to 9 assets)	3.8	3.4	0.4	0.2	2.0 **	3.6	3.2	0.4	0.2	1.7 **	4.0	3.4	0.5	0.2	2.2 **
Number of assets at the farm (1 to 15 assets)	0.8	0.7	0.0	0.2	0.2	|	1.4	0.4	0.2	1.8 **	2.7	2.9	-0.2	0.2	-0.9
% of producers who reported cost increases	91.3%	80.9%	10.4%	0.0	2.3 **	78.3%	73.2%	5.1%	0.1	0.8	81.5%	66.9%	14.7%	0.1	2.3 **
% or producers who reported coffee price drops	85.9%	70.7%	15.2%	0.1	2.6 ***	3.3%	30.1%	-26.8%	0.1	-5.2 ***	26.1%	23.8%	2.3%	0.1	0.4
% of producers who offer free training	1.2%	2.0%	-0.7%	0.0	-0.3					-	36.8%	7.8%	29.0%	0.1	4.3 ***
% of farms that provide protective gear	9.8%	10.3%	-0.5%	0.0	-0.1	9.8%	9.5%	0.3%	0.0	0.1 -	30.4%	47.7%	-17.2%	0.1	-2.5 ***
Farm and Market perceptions															
Farm management	6.9	7.0	-0.1	0.3	-0.4	6.8	7.2	-0.4	0.2	-1.7 **	7.9	7.3	0.7	0.3	2.1 **
Farm environment	7.7	7.5	0.2	0.2	0.9	7.8	7.8	0.0	0.2	0.1	8.3	8.0	0.3	0.3	1.0
Coffee selling opportunities	8.5	8.4	0.0	0.3	0.2	8.8	9.0	-0.3	0.1	-1.8 **	8.9	8.7	0.2	0.3	0.5
Price received	3.7	3.3	0.5	0.4	1.2	5.9	5.7	0.2	0.3	0.7	8.0	7.7	0.3	0.4	0.7
Price volatility	2.1	2.3	-0.2	0.2	-1.1	4.2	3.6	0.6	0.3	2.2 **	4.6	5.3	-0.7	0.5	-1.3 *
Facility to sell their coffee	9.4	9.3	0.2	0.2	0.9	7.8	8.3	-0.5	0.2	-1.9 **	9.2	8.9	0.3	0.3	1.1
Relationships with buyers	8.9	8.9	0.0	0.2	-0.1	7.1	8.3	-1.2	0.2	-4.8 ***	9.2	8.9	0.4	0.2	1.5 *
Household perceptions															
Level of income	6.3	5.9	0.4	0.3	1.2	6.1	6.2	-0.1	0.2	-0.5	6.0	5.3	0.7	0.4	1.9 **
Household quality of life	7.1	6.7	0.4	0.3	1.5 *	6.8	7.2	-0.4	0.2	-1.5 *	7.3	6.8	0.6	0.3	1.6 *
Family health	7.5	7.3	0.2	0.3	0.6	6.6	6.8	-0.2	0.3	-0.7	7.2	6.5	0.7	0.4	1.7 **
Household economics	6.0	5.9	0.1	0.3	0.5	5.4	5.8	-0.4	0.3	-1.7 **	6.1	5.5	0.7	0.4	1.6 *
Relations with workers	8.4	8.2	0.2	0.3	0.6	8.4	8.7	-0.4	0.2	-2.0 **	9.0	8.9	0.2	0.3	0.6
Village environment	7.6	7.5	0.1	0.3	0.4	7.7	7.6	0.1	0.2	0.5	7.4	7.8	-0.4	0.3	-1.2
Community relations	8.8	8.6	0.2	0.2	1.0	8.8	9.4	-0.6	0.1	-4.5 ***	9.1	9.0	0.1	0.3	0.5

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations.

*** p< 0,01; ** p< 0,05; * p<0,1

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

Appendix 3.1: Fairtrade vs conventional producers for factors facilitating participation and farm economics - PSM-Kernel

	2008					2009					2011				
	FLO	Ctrol	Dif.	S.E.	t-stat	FLO	Ctrol	Dif.	S.E.	t-stat	FLO	Ctrol	Dif.	S.E.	t-stat
Factors facilitating participation															
% of farmers that received subsidies and cash transfers*						17.3%	28.4%	-11.1%	0.058	-1.900 **	0.8%	8.6%	-7.8%	0.028	-2.750 ***
% of farmers that received Aid in kind*						34.6%	17.0%	17.6%	0.057	3.070 ***	72.4%	58.1%	14.4%	0.063	2.270 **
Average hours of training in GAP per year	148.3	74.5	73.8	22.28	3.310 ***	63.7	44.2	19.5	13.81	1.410 *	26.9	14.0	12.9	4.136	3.110 ***
% of producers who were trained to improve the quality of coffee	58.7%	8.1%	50.7%	0.053	9.490 ***	69.3%	20.4%	48.9%	0.058	8.460 ***	79.5%	28.6%	51.0%	0.057	8.950 ***
% of producers that participated from coffee tasting trials	85.8%	16.3%	69.5%	0.050	13.900 ***	71.7%	9.0%	62.7%	0.051	12.350 ***	56.7%	2.8%	53.9%	0.048	11.300 ***
% of producers who fertilize under technical recommendation	43.3%	24.2%	19.1%	0.062	3.080 ***	66.1%	18.7%	47.5%	0.057	8.300 ***	84.3%	21.6%	62.7%	0.053	11.790 ***
% of producers that have credits	63.8%	37.3%	26.5%	0.065	4.050 ***	64.6%	42.8%	21.8%	0.065	3.340 ***	75.6%	40.4%	35.2%	0.062	5.640 ***
% of producers with milling machine	44.9%	31.9%	13.0%	0.065	1.990 **	51.2%	35.2%	15.9%	0.066	2.430 ***	77.2%	81.6%	-4.5%	0.055	-0.820 -
% of producers employing cover floor or parabolic dry to sun-dry coffee	84.3%	27.5%	56.8%	0.057	9.940 ***	79.5%	30.9%	48.6%	0.059	8.210 ***	81.1%	49.2%	31.9%	0.061	5.210 ***
% of harvest sold as parchment	70.0%	37.7%	32.3%	0.053	6.140 ***	66.7%	33.6%	33.1%	0.052	6.380 ***	66.6%	45.5%	21.1%	0.054	3.900 ***
% of farmers who perform Soil analysis	51.2%	16.4%	34.7%	0.059	5.890 ***	52.8%	21.7%	31.0%	0.062	5.040 ***	26.8%	7.3%	19.4%	0.048	4.050 ***
Sythetic Fertilizers applied (kg/ha)	1,090.2	857.5	232.6	83.19	2.800 ***	1,035.4	858.9	176.5	88.99	1.980 **	1,761.3	951.2	810.2	116.18	6.970 ***
% of farmers who adopt GAP after training	89.0%	41.7%	47.3%	0.057	8.360 ***	82.7%	27.6%	55.1%	0.057	9.630 ***	74.0%	41.1%	32.9%	0.063	5.190 ***
% or producers that keep records	27.6%	3.5%	24.1%	0.044	5.420 ***	37.8%	5.7%	32.1%	0.050	6.430 ***	34.6%	2.7%	31.9%	0.045	7.040 ***
% of renovated trees	14.5%	10.9%	3.6%	0.029	1.240 -	10.5%	11.2%	-0.6%	0.028	-0.230 -	16.1%	16.2%	-0.1%	0.031	-0.050 -
% of trees resistant to rust infection	16.3%	22.3%	-6.0%	0.041	-1.460 *	15.4%	26.0%	-10.7%	0.040	-2.680 ***	37.8%	45.2%	-7.4%	0.047	-1.570 *
Farm economics															
Gross revenue from coffee (Thousand COP/ha)	5,711	3,714	1,997	440.5	4.530 ***	6,457	4,132	2,325	536.4	4.330 ***	7,794	4,412	3,382	754.0	4.490 ***
Production cost (Thousand COP/ha)	4,174	2,810	1,364	311.8	4.370 ***	4,020	2,379	1,641	270.2	6.070 ***	4,349	2,013	2,335	317.5	7.360 ***
Gross margin from coffee (Thousand COP/ha)	1,537	903	633.3	319.3	1.980 **	2,438	1,753	684.2	390.8	1.750 **	3,445	2,399	1,047	536.7	1.950 **
Average Farm-gate price (COP/@)	54.6	47.7	6.8	1.1	6.220 ***	71.6	61.7	9.8	1.8	5.570 ***	96.87	90.56	6.31	1.432	4.410 ***
Average cost (COP/@)	44.0	40.0	4.0	2.8	1.400 *	52.2	38.9	13.2	3.0	4.380 ***	59.94	57.45	2.49	4.631	0.540 -
Average gross margin (COP/@)	10.8	7.3	3.5	2.8	1.230 -	19.8	22.4	-2.5	3.5	-0.730 -	36.84	32.94	3.90	4.980	0.780 -
Share of labor Cost (ha)	46.8%	42.8%	4.0%	0.028	1.420 *	41.5%	39.5%	2.0%	0.028	0.710 -	41.5%	34.2%	7.3%	0.030	2.420 ***
Yield of parchment coffee (@/ha)	103.5	73.8	29.8	8.754	3.400 ***	87.4	65.4	22.1	7.399	2.980 ***	77.8	44.0	33.8	7.213	4.690 ***

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations.

*** p< 0,01; ** p< 0,05; * p<0,1

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

Appendix 3.2: Fairtrade vs conventional producers for risk, vulnerability and perceptions - PSM-Kernel

	2008					2009					2011				
	FLO	Ctrol	Dif.	S.E.	t-stat	FLO	Ctrol	Dif.	S.E.	t-stat	FLO	Ctrol	Dif.	S.E.	t-stat
Risk and vulnerability															
% of family income coming from coffee	83.8%	74.1%	9.7%	0.029	3.400 ***	87.9%	69.4%	18.5%	0.030	6.230 ***	86.4%	66.9%	19.5%	0.030	6.530 ***
% of farms with food crops	98.4%	93.5%	5.0%	0.025	1.980 **	90.6%	94.0%	-3.4%	0.034	-1.020 -	96.9%	97.2%	-0.4%	0.024	-0.150 -
% of farms with cash crops	32.3%	60.4%	-28.1%	0.064	-4.370 ***	30.7%	74.1%	-43.4%	0.059	-7.370 ***	18.9%	64.1%	-45.2%	0.059	-7.640 ***
% Paid labor	61%	49%	12%	0.040	3.050 ***	38%	38%	0%	0.039	-0.130 -	29%	28%	2%	0.036	0.420 -
Wage per day (COP/per day)	17,672	17,708	-36.4	705.2	-0.050 -	15,167	15,001	165.2	708.2	0.230 -	16,736	14,396	2339.8	697.0	3.360 ***
Hired workers	2.9	3.0	-0.1	0.660	-0.220 -	3.8	2.2	1.6	0.481	3.320 ***	3.7	1.2	2.5	0.481	5.220 ***
Number of assets at the household (1 to 9 assets)	4.7	4.1	0.6	0.233	2.560 ***	4.7	3.8	0.9	0.238	3.700 ***	5.0	4.2	0.8	0.228	3.370 ***
Number of assets at the farm (1 to 15 assets)	2.3	1.3	1.0	0.261	3.840 ***	3.9	2.5	1.4	0.292	4.830 ***	4.7	3.6	1.1	0.284	4.010 ***
% of producers who reported cost increases	92.1%	96.4%	-4.3%	0.034	-1.270 -	84.3%	69.5%	14.7%	0.054	2.700 ***	30.7%	77.9%	-47.2%	0.059	-8.010 ***
% or producers who reported coffee price drops	81.9%	93.1%	-11.2%	0.044	-2.530 ***	44.1%	28.3%	15.8%	0.064	2.460 ***	0.0%	29.2%	-29.2%	0.047	-6.250 ***
% of producers who offer free training	2.7%	0.6%	2.0%	0.019	1.080	4.3%	0.4%	3.8%	0.022	1.720 **	0.0%	32.9%	-32.9%	0.073	-4.530 ***
% of farms that provide protective gear	46.5%	26.7%	19.7%	0.063	3.140 ***	51.2%	12.2%	39.0%	0.059	6.650 ***	81.1%	17.1%	64.0%	0.053	12.110 ***
Market perceptions															
Farm management	7.7	7.1	0.6	0.253	2.400 ***	8.4	7.2	1.2	0.236	4.960 ***	9.2	7.1	2.1	0.236	8.730 ***
Farm environment	8.4	7.9	0.6	0.183	3.110 ***	8.6	7.9	0.6	0.173	3.720 ***	9.2	7.9	1.3	0.214	6.270 ***
Coffee selling opportunities	9.0	8.9	0.1	0.182	0.600	8.8	8.7	0.1	0.221	0.620	9.9	8.5	1.4	0.251	5.570 ***
Price received	3.5	2.9	0.6	0.327	1.910 **	5.8	5.0	0.8	0.345	2.220 **	9.4	8.4	1.0	0.226	4.530 ***
Price volatility	3.4	3.3	0.1	0.274	0.230	3.2	3.3	-0.1	0.300	-0.340	8.7	5.5	3.2	0.418	7.690 ***
Facility to sell their coffee.	9.5	9.5	0.0	0.147	-0.240	9.4	8.5	0.9	0.210	4.220 ***	9.8	9.1	0.7	0.187	3.860 ***
Relationships with buyers	9.2	9.1	0.1	0.147	0.790	9.1	8.1	1.0	0.198	4.850 ***	9.9	9.2	0.7	0.146	5.040 ***
Household perceptions															
Level of income	6.7	6.5	0.2	0.277	0.730	6.6	6.0	0.6	0.323	1.900 **	8.4	5.0	3.5	0.288	12.010 ***
Household quality of life	7.7	7.4	0.4	0.225	1.730 **	7.4	7.2	0.2	0.278	0.690	9.1	7.5	1.6	0.251	6.320 ***
Family health	7.8	7.9	0.0	0.257	-0.150	7.8	7.5	0.3	0.301	1.100	9.3	7.6	1.7	0.282	5.990 ***
Household economics	7.0	6.2	0.8	0.286	2.660 ***	7.0	5.9	1.1	0.325	3.340 ***	8.6	5.2	3.4	0.288	11.800 ***
Relations with workers	8.9	8.4	0.5	0.210	2.330 ***	8.4	8.3	0.1	0.214	0.270	9.8	9.5	0.3	0.161	1.890 **
Village environment	8.0	7.8	0.2	0.208	0.840	8.5	8.0	0.5	0.199	2.530 ***	9.0	6.6	2.4	0.230	10.410 ***
Community relations	8.9	8.4	0.6	0.203	2.890 ***	8.8	8.7	0.1	0.201	0.440	9.9	9.0	0.9	0.174	4.950 ***

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations.

*** p< 0,01; ** p< 0,05; * p<0,1

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

Appendix 4.1: Nespresso AAA_2 vs Nespresso AAA_1 producers for factors facilitating participation and farm economics - PSM-Kernel

	AAA 2009					AAA 2011				
	AAA_2	AAA_1	Dif.	S.E.	t-stat	AAA_2	AAA_1	Dif.	S.E.	t-stat
Factors facilitating participation										
% of farmers that received subsidies and cash transfers*	27.0%	40.9%	-13.9%	0.087	-1.590 *	13.8%	16.4%	-2.6%	0.074	-0.350
% of farmers that received Aid in kind*	32.3%	16.0%	16.3%	0.075	2.180 **	58.5%	58.4%	0.1%	0.092	0.020
Average hours of training in GAP per year	42.7	9.9	32.8	5.569	5.890 ***	37.7	38.6	-0.9	7.796	-0.120
% of producers who were trained to improve the quality of coffee	49.2%	1.6%	47.7%	0.043	11.010 ***	77.8%	56.3%	21.5%	0.089	2.400 ***
% of producers that participated from coffee tasting trials	36.0%	15.9%	20.1%	0.070	2.860 ***	24.9%	19.8%	5.1%	0.067	0.750
% of producers who fertilize under technical recommendation	58.7%	40.7%	18.0%	0.091	1.970 **	72.5%	52.7%	19.8%	0.090	2.200 **
% of producers that have credits	48.7%	45.7%	3.0%	0.090	0.330 -	58.2%	44.7%	13.5%	0.089	1.520 *
% of producers with milling machine	19.6%	20.9%	-1.3%	0.078	-0.170 -	65.1%	54.0%	11.0%	0.089	1.240
% of producers employing cover floor or parabolic dry to sun-dry coffee	81.5%	59.3%	22.2%	0.084	2.640 ***	86.2%	63.5%	22.7%	0.074	3.090 ***
% of harvest sold as parchment	84.5%	77.4%	7.1%	0.062	1.140 -	86.6%	84.6%	2.0%	0.058	0.350
% of farmers who perform Soil analysis	27.5%	5.7%	21.8%	0.049	4.480 ***	44.4%	9.6%	34.9%	0.058	6.020 ***
Sythetic Fertilizers applied (kg/ha)	957.4	959.4	-2.1	102.38	-0.020 -	1,223.1	927.8	295.3	118.76	2.490 ***
% of farmers who adopt GAP after training	75.7%	49.1%	26.5%	0.089	2.980 ***	91.0%	66.2%	24.8%	0.082	3.010 ***
% or producers that keep records	25.4%	6.3%	19.1%	0.059	3.220 ***	78.8%	20.3%	58.5%	0.075	7.770 ***
% of renovated trees	12.8%	7.9%	4.9%	0.043	1.160 -	24.4%	23.8%	0.6%	0.061	0.090
% of trees resistant to coffee rust	42.3%	41.7%	0.6%	0.068	0.090 -	69.3%	64.4%	4.9%	0.070	0.700
Farm economics										
Gross revenue from coffee (Thousand COP/ha)	8,287	8,341	-53.9	1,031	-0.050 -	8,829	7,343	1,486	1,036	1.430 *
Production cost (Thousand COP/ha)	3,256	2,712	544.2	290.3	1.870 **	3,466	3,304	161.8	334.6	0.480
Gross margin from coffee (Thousand COP/ha)	5,031	5,629	-598.1	833.8	-0.720 -	5,363	4,039	1,324	848.4	1.560 *
Average Farm-gate price (COP/@)	79.33	81.86	-2.53	1.834	-1.380 *	103.57	102.15	1.42	2.024	0.700
Average cost (COP/@)	35.56	31.09	4.48	4.016	1.110 -	56.30	64.42	-8.12	10.790	-0.750
Average gross margin (COP/@)	43.38	50.80	-7.43	4.452	-1.670 **	47.24	38.09	9.15	11.355	0.810
Share of labor Cost (ha)	49.2%	43.2%	6.0%	0.037	1.600 *	50.2%	43.0%	7.2%	0.040	1.800 **
Yield of parchment coffee (@/ha)	102.8	96.7	6.0	12.248	0.490 -	82.4	69.5	12.9	9.665	1.340 *

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations.

*** p< 0,01; ** p< 0,05; * p<0,1

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

Appendix 4.2: Nespresso AAA_2 vs Nespresso AAA_1 producers for risk, vulnerability and perceptions - PSM-Kernel

	AAA 2009					AAA 2011				
	AAA_2	AAA_1	Dif.	S.E.	t-stat	AAA_2	AAA_1	Dif.	S.E.	t-stat
Risk and vulnerability										
% of family income coming from coffee	71.8%	67.4%	4.3%	0.037	1.170	67.2%	61.6%	5.6%	0.052	1.070
% of farms with food crops	98.4%	97.9%	0.5%	0.019	0.270	96.3%	96.1%	0.2%	0.035	0.050
% of farms with cash crops	82.5%	85.1%	-2.5%	0.055	-0.460	73.5%	69.6%	4.0%	0.082	0.480
% Paid labor	53%	53%	-1%	0.047	-0.110	46%	45%	1%	0.048	0.210
Wage per day (COP/per day)	10,334	9,462	871.5	510.8	1.710 **	11,347	10,643	704.1	534.1	1.320 *
Hired workers	2.4	2.5	-0.1	0.352	-0.390	2.6	2.9	-0.3	0.412	-0.710
Number of assets at the household (1 to 9 assets)	4.5	4.2	0.3	0.275	1.030	4.7	4.5	0.2	0.288	0.620
Number of assets at the farm (1 to 15 assets)	2.6	2.3	0.3	0.323	0.790	4.0	3.0	1.1	0.315	3.430 ***
% or producers who reported cost increases	75.7%	81.4%	-5.7%	0.073	-0.790	77.8%	80.1%	-2.3%	0.073	-0.320
% or producers who reported coffee price drops	36.5%	1.8%	34.7%	0.045	7.680 ***	23.3%	32.6%	-9.3%	0.079	-1.170
% of producers who offer free training	13.8%	0.0%	13.8%	0.027	5.040 ***	65.6%	43.2%	22.5%	0.103	2.180 **
% of farms that provide protective gear	14.8%	20.1%	-5.3%	0.056	-0.940 -	49.2%	36.7%	12.5%	0.087	1.450 *
Market perceptions										
Farm management	8.2	6.9	1.3	0.228	5.720 ***	8.1	8.4	-0.4	0.389	-0.910
Farm environment	8.5	7.9	0.6	0.170	3.290 ***	8.9	8.3	0.6	0.386	1.510 *
Coffee selling opportunities	8.9	8.8	0.2	0.170	0.890	8.7	8.9	-0.2	0.418	-0.450
Price received	5.4	6.0	-0.6	0.323	-2.010 **	7.9	7.8	0.1	0.477	0.140
Price volatility	2.9	4.5	-1.6	0.320	-4.910 ***	4.8	3.9	0.9	0.613	1.510 *
Facility to sell their coffee.	8.5	7.9	0.6	0.240	2.390 ***	8.4	8.9	-0.6	0.392	-1.410 *
Relationships with buyers	8.6	7.5	1.1	0.288	3.750 ***	9.0	9.2	-0.1	0.263	-0.480
Household perceptions										
Level of income	6.5	6.2	0.3	0.263	1.050	6.1	6.2	-0.1	0.472	-0.170
Household quality of life	7.4	6.9	0.5	0.259	1.860 **	7.4	7.9	-0.5	0.440	-1.030
Family health	7.6	6.9	0.8	0.342	2.240 **	7.5	7.8	-0.3	0.490	-0.520
Household economics	6.5	5.3	1.2	0.314	3.800 ***	6.0	6.7	-0.7	0.505	-1.420 *
Relations with workers	8.4	8.1	0.4	0.185	1.960 **	8.9	9.4	-0.5	0.361	-1.340 *
Village environment	7.3	7.7	-0.4	0.216	-1.920 **	7.4	7.6	-0.2	0.435	-0.390
Community relations	9.3	8.9	0.4	0.188	2.360 ***	8.8	9.1	-0.3	0.328	-0.920

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations.

*** p< 0,01; ** p< 0,05; * p<0,1

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and 2011

Appendix 5 Characteristics of differentiated and conventional coffee markets

Mainstream or Conventional coffees are the typical industrial grades that flow in the undifferentiated commodity channels and offered by the largest commercial roasters. According to Lewin et al (2004, p. 106) they are often, though not always, bought and sold on the basis of price and distributed through institutional or mainstream channels such as supermarkets. Mainstream coffees are nearly always pre-ground blends that are often unidentified in terms of origin. For such coffees it is not possible to add monetary value as prices are determined solely by market conditions (ITC 2010).

Differentiated coffees are those that can be clearly distinguished because of distinct origin, defined processes, or exceptional characteristics like superior taste or zero defects, Lewin et al (2004, p.99) can be highly prized for their characteristics. Differentiated coffees are often distinguished by a more direct relationship with a roaster or buyer rather than being traded in bulk or via the commodity markets. These relationships imply reliable and consistent grading procedures, strict compliance with contractual obligations, and regular delivery (ITC 2010).

Speciality coffee typically refers to different types of coffee depending on their particular quality characteristics such as physical and organoleptic properties, growing and planting practices, geographic origin, which make them eligible for a special premium price over other coffee or are perceived by consumers as being different from the widely available mainstream brands of coffee (Giovannucci et. al. 2002, p. 50; ITC 2010). According to Lewin et. al. (2004, p. 106) speciality coffee shares the commonality of being well-prepared (processed) with some distinctive attribute in their cup quality and no discernible defects. However, the term has become so broad that there is no universally accepted definition of what constitutes 'speciality coffee', and it frequently means different things to different people.

Gourmet is used to refer strictly to higher quality and exceptional coffee. Such coffee is most often sold as whole beans. Gourmet coffee has sometimes come to be used interchangeably with speciality coffee.

Geographic Indications of Origin (GIO) apply to coffee from areas that are specifically demarcated and acknowledged as having distinct physical characteristics such as microclimate, specific varietals, or soil composition that together may impart distinctive flavour characteristics. This category can also loosely encompass estate coffee.

Sustainable Certified coffee is commonly defined as that which includes the three pillars of sustainability - economic viability for farmers, environmental conservation and social responsibility, and are certified by independent third parties Giovannucci (2008, p. 33). Some of these types of coffee are Organic, Fairtrade, Rainforest Alliance, Bird friendly, Utz Certified and Smithsonian Migratory Bird Centre (SMBC).

Sustainable Verified coffees Private company standards for quality and sustainable coffee production refer to those corporations and corporate-driven groups developing their own differentiation standards around the issues of sustainability. They are not independently verified.

Source: Author's adaptation from Lewin et al. (2004)

Appendix 6 Main features of selected sustainable coffee certifications and verifications.

	Fairtrade	Organic	Rainforest Alliance Certified	Utz Certified	Nespresso AAA	C.A.F.E. Practices	4C
Organisation that sets the standard	The Fair Trade Labeling Organisation: FLO	IFOAM	Rainforest Alliance	Utz Kapeh Fundation	Nestle-Nespresso, with Rainforest Alliance and SAN network	Starbucks in parthnershp with Rainforest Alliance	4C
Aimed at	Improving the welfare and income of small producers and strengthen their organisations	Preserve and improve the soil without using synthetic chemicals. Includes economic and productive functions	Incorporate social development and biodiversity conservation criteria	Encourage the adoption of good agricultural practices and management practices	Adds a quality dimension to the sustainability principles (economic, social and environmental) to safeguard the long-term supply of highest quality coffee	Establish social and environmental criteria, plus the adoption of quality parameters	Encourage the adoption of good agricultural practices and management
Form of monitoring and compliance	Annual audit paid by producer groups	Independent annual audit paid by producers or producer groups	Independent annual audit paid by producers or producer groups	Independent annual audit paid for by producers or producer groups	Annual verification of compliance.	Annual verification of compliance	Annual verification of compliance
Fees to producers	Must cover verification and certification costs since 2004	Must cover verification and certification costs	Must cover verification and certification costs	Must cover verification and certification costs	Currently there is no cost. By 2013 producer must be certified against Rainforest Alliance	Must cover verification costs	Must cover the costs of certification according to farm size
Fees to buyers (traders)	Yes - Licensed roasters in UE pay TransFair USA USD ¢0.10 per pound to cover the cost of audits, consumer awareness campaigns and FLO affiliation	Yes - Certification costs vary by certifier. Fees ranging from $700 to ©$3000/year	USD ¢1.5 on each pound of green coffee that is purchased as RA Certified by coffee importers. This fee will only be charged once in the supply chain	USD $0.012 per pound to “first buyer”, passed on through supply	No	No	Yearly membership fees for all actors along the chain according to size and position in chain
Price differential to farmers	Yes. There is a minimum price and social premium set by FLO	Yes. Premiums versus non organic certified coffees are paid to farmers.	Yes. Differential is negotiated between buyer and seller	Yes. Differential is negotiated between buyer and seller	Yes. Premium over conventional coffee and other labels	Yes. Premium over conventional coffee and price should reflect coffee quality	No fixed, guaranteed minimum price, but free negotiation between individual 4C members.
Trade conditions	No assurance of demand. Includes premium over the market price	High assurance of demand, with a market price premium	No assurance of demand. Price premium depends on market demand	No assurance of demand. Price premium depends on market demand	High assurance of actual demand, only if supplier quality is high	High assurance of actual demand by Starbucks, if supplier level score is high	No assurance of demand.
Financing producers	Yes – buyers requirements obliged to provide prefinance if requested by producers	No	No	No	No	No	No

Source: Author’s adaptation from Humphrey (2006), Daviron and Ponte (2006), Potts et al. (2007), Giovannucci and Purcell (2008), Nespresso (2009), Oxfam (2009) and SCAA (2010)

Appendix 7: Economic key variables by farm size Nespresso AAA_1 vs. control group

		2008			2009			2011		
		AAA_1	Ctrl		AAA_1	Ctrl		AAA_1	Ctrl	
Below 1 ha	Gross revenue (Thousand COP)	2,162	1,325	***	5,102	2,360	***	3,657	2,591	*
	Cost - (Thousand COP)	1,352	959	**	1,805	920	**	1,683	1,097	***
	Gross margin - (Thousand COP)	1,003	365	**	3,813	1,457	**	2,135	1,523	
	Coffee area (ha)	0.49	0.37	*	0.54	0.44	*	0.55	0.45	***
	% of the farm area planted in coffee	88%	85%		95%	93%		96%	89%	***
	Yield (@/ha)	106.0	73.2	**	124.5	90.0	**	62.4	68.3	
	% of paid labor	48%	46%		41%	32%		32%	27%	
	% of income coming from coffee	64%	56%		69%	58%		59%	55%	
Between 1 and 5 ha	Gross revenue (Thousand COP)	5,893	2,394	***	7,721	4,924	***	8,053	3,790	***
	Cost - (Thousand COP)	3,698	1,627	***	2,651	2,129	***	3,710	2,537	**
	Gross margin - (Thousand COP)	2,651	783	***	3,813	2,904	***	4,715	1,266	***
	Coffee area (ha)	1.67	0.99	**	1.14	1.00	**	1.25	1.10	
	% of the farm area planted in coffee	74%	70%		74%	64%		76%	67%	**
	Yield (@/ha)	88.7	44.0	***	85.3	68.0	***	65.6	38.8	***
	% of paid labor	66%	53%	***	50%	50%	***	38%	40%	
	% of income coming from coffee	76%	65%	**	65%	67%	**	63%	63%	
Above 5 ha	Gross revenue (Thousand COP)	3,686	5,839		11,800	10,700		8,191	16,500	
	Cost - (Thousand COP)	2,542	7,890	*	5,426	4,461	*	3,659	3,221	
	Gross margin - (Thousand COP)	1,535	-2,050		7,567	6,460		4,965	13,200	
	Coffee area (ha)	7.3	1.4		2.7	2.0		1.9	2.1	
	% of the farm area planted in coffee	19%	13%	*	42%	22%	*	32%	19%	
	Yield (@/ha)	43.7	79.3		58.6	63.3		49.4	62.4	
	% of paid labor	56%	74%		67%	62%		63%	72%	
	% of income coming from coffee	47%	43%		58%	54%		44%	60%	

continued…

Appendix 7: Economic key variables by farm size Fairtrade vs. control group

		2008			2009			2011		
		Fairtrade	Ctrl		Fairtrade	Ctrl		Fairtrade	Ctrl	
Below 1 ha	Gross revenue (Thousand COP)	3,615	2,662		5,738	2,531	*	4,432	1,838	**
	Cost - (Thousand COP)	3,056	1,901	*	3,462	1,459	**	2,694	1,225	**
	Gross margin - (Thousand COP)	559	761		2,276	1,071		1,795	612	*
	Coffee area (ha)	0.48	0.53		0.51	0.55		0.53	0.42	
	% of the farm area planted in coffee	91%	93%		87%	93%		88%	86%	
	Yield (@/ha)	148.0	116.1		147.9	87.4	*	75.5	44.9	**
	% of paid labor	50%	32%	**	27%	22%		11%	16%	
	% of income coming from coffee	85%	73%		86%	57%	***	83%	64%	**
Between 1 and 5 ha	Gross revenue (Thousand COP)	9,605	6,197	***	10,500	6,893	***	15,200	7,601	***
	Cost - (Thousand COP)	7,403	5,266	**	7,205	4,998	***	8,544	3,613	***
	Gross margin - (Thousand COP)	2,228	931	*	3,615	1,895	**	6,881	4,011	**
	Coffee area (ha)	1.77	1.74		1.81	1.90		1.91	1.69	*
	% of the farm area planted in coffee	72%	73%		74%	71%		73%	72%	
	Yield (@/ha)	99.7	77.9	**	81.7	58.6	***	84.1	48.3	***
	% of paid labor	58%	46%	***	36%	34%		25%	27%	
	% of income coming from coffee	83%	77%	*	88%	73%	***	88%	70%	***
Above 5 ha	Gross revenue (Thousand COP)	18,900	11,700	**	23,800	16,800	*	29,100	15,300	***
	Cost - (Thousand COP)	13,500	9,800	**	16,700	10,300	**	17,100	8,301	***
	Gross margin - (Thousand COP)	5,567	1,882	**	8,301	6,496		12,400	6,970	*
	Coffee area (ha)	3.4	3.5		3.9	3.4		4.0	3.7	
	% of the farm area planted in coffee	44%	38%		44%	33%	***	45%	41%	
	Yield (@/ha)	95.8	64.5	***	86.5	72.3		68.0	40.4	***
	% of paid labor	70%	59%	**	46%	46%		41%	38%	
	% of income coming from coffee	85%	72%	***	88%	70%	***	85%	67%	***

Continued…

Appendix 7: Economic key variables by farm sizes Nespresso AAA_2 vs. Nespresso AAA_1

		2009			2011		
		AAA_2	AAA_1		AAA_2	AAA_1	
Less than 1 ha	Gross revenue (Thousand COP)	4,621	4,921		5,390	3,428	**
	Cost - (Thousand COP)	2,005	1,838		2,209	1,700	*
	Gross margin - (Thousand COP)	2,974	3,589		3,480	1,876	**
	Total volumen (@)	63	63		56.4	33.9	**
	Yield (@/ha)	102	120		89.7	57.7	***
	% of paid labor	43%	42%		37%	33%	
	% dependence Income from coffee	63%	69%		59%	60%	
Between1 & 5 ha	Gross revenue (Thousand COP)	13,500	7,969	***	14,200	8,172	***
	Cost - (Thousand COP)	5,690	2,848	***	5,911	4,009	***
	Gross margin - (Thousand COP)	8,715	5,761	***	8,910	4,504	***
	Total volumen (@)	185	104	***	143.2	84.4	***
	Yield (@/ha)	108	81	***	84.0	64.3	**
	% of paid labor	54%	53%		46%	42%	
	% dependence Income from coffee	74%	65%	***	69%	61%	*
More than 5 ha	Gross revenue (Thousand COP)	20,300	11,100	**	19,100	6,356	**
	Cost - (Thousand COP)	9,156	5,371	**	12,000	2,821	***
	Gross margin - (Thousand COP)	12,600	6,870		8,031	3,860	
	Total volumen (@)	275	171	*	189.0	60.8	**
	Yield (@/ha)	75	58		53.8	41.8	
	% of paid labor	71%	69%		70%	54%	
	% dependence Income from coffee	78%	60%	***	74%	42%	***

Means and Standards Errors are estimated by linear regression. Kernell matching were used only on common-support observations; *** p< 0,01; ** p< 0,05; * p<0,1; § @=12.5 kg

Source: Author's own calculations based on CRECE's surveys with data from 2008, 2009 and